Bundesanstalt für Geowissenschaften und Rohstoffe

Report

An Occupational Safety Health System for small scale Mines in Rwanda

Interventions in Support of Mining Companies' Capacity to Comply with CTC

Preface

The Report from PROJEKT-CONSULT GmbH submitted to the Rwanda Geology and Mines Authority, **OGMR** and The Federal Institute for Geosciences and Natural Resources, **BGR** on July 15th, 2010 is modified under some aspects. For giving an anonymized version as informational data file the naming of companies are avoided. The summarized observations from the mine visits conducted during the assignment are shortened to exemplarily descriptions.

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EXECUTIVE SUMMARY

In association with the pilot project "*Building Best Practice in Rwandan Mineral Production*," the Rwandan Geology and Mines Authority (OGMR) and the Federal Institute for Geosciences and Natural Resources (BGR) are currently implementing a program to foster ethical standards and good practice in the minerals sector of Rwanda, thereby enabling certification of origin of minerals purchased by industrial end users.

In association with this pilot project, three Baseline Audits of Rwandan Mining Companies were undertaken in 2009 in order to ascertain the initial level of compliance with the Certified Trading Chain (CTC) standards set and identify critical issues where expert technical assistance is required. Recommendations from this work related to, among other topics, the need for assistance in development of:

- Company guidelines for adherence to good corporate governance
- Security policies and guidelines for a security management system
- Company policies and procedures for gender equity in employment and against bribery and illicit payments
- An Occupational Health and Safety System

This Report describes work undertaken in support of the latter critical issue. An Occupational Health and Safety System provides the foundation for a safe and healthy working environment through policies, procedures, roles and responsibilities and systems of accountability. It is the basis for measures to prevent and counter disease and injury of workers. Within the context of small Rwandan mines, the OSH System is also used as one of the vehicles through which work arrangements with artisanal miners and other informal workers can be formalized.

Sections One and Two provide a background on and justification for this work, the methodology used and describe occupational safety and health (OSH) conditions in operations run by participating companies. The legal and regulatory framework guiding OSH in small Rwandan mines is also summarized.

Among other technical, financial and organizational issues, participating Rwandan Companies face significant challenges in dealing with large artisanal mining workforces who range in numbers from 200-1000 women and men. Measures have therefore been provided to integrate these miners within the OSH System while a dedicated effort to formalize work arrangements will be needed to ensure that OSH objectives are met.

Sections Three to Five of the report consist of the OSH Policy and Guidelines for distribution to and use by the participating companies. The OSH System includes:

- **OSH Policy.** A template for a general OSH Policy has been provided as a basis Companies to customize and adopt for their specific situations. A complimentary HIV/AIDS Policy is also suggested.
- **OSH Roles and Responsibilities.** Based on the current organizational arrangements found in most Rwanda Mines, specific accountabilities and responsibilities for those along lines of authorities, workers, visitors and suppliers are outlined. These can be adapted and readily integrated into job description.
- **OSH Program Guidelines** for:
  - Hazard and Risk Analysis.
  - Preventative Maintenance Program.
  - Incident Investigation Program.
  - Early and Safe Return to Work Program
  - Communication Model.
  - Workforce Training Program.

- **Guidelines for Continuous Improvements**, to provide a basis for monitoring, evaluation and adaptation of the OSH System including:
  - Workplace Inspection Program with a detailed checklist.
  - Accountability System, inclusive of performance monitoring mechanisms and modes of disciplinary action.
- **Useful Sources of Information** are outlined in Annex One, which includes free and downloadable manuals and handbooks specifically written in simple, pictorial form to help identify hazards and risks in small scale mining and appropriate preventative and corrective actions.

The success of the OSH Policy and Programs is clearly contingent on Company capacity and commitment to bring artisanal miners into the fold. CTC target companies generally recognize the significance of formal integration of artisanal miners and informal workers in achieving progress towards safe and healthy work environments. However, the Companies have varying degrees of technical and financial capacity and, more importantly, differing levels of interest and motivation to formalize artisanal miners and support OSH improvements in their operations.

As detailed in Section 2.4, related recommendations are put forward in the following areas (Section 2.4):

- Support for organization formation and strengthening
- Technical capacity and training gaps
- Legal and regulatory reform
- OSH Requirements under CTC

It is essential to recognize that, despite large artisanal mining workforces of 200-1000 and widespread OSH hazards and risks, most Rwandan Companies participating in the pilot project have far more organizational, technical and financial capacity than the typical artisanal mine site and small mining company in the region. As such, the OSH Policy, Guidelines and Programs put forth herein are tailored *specifically* to the target companies and, although they provide a useful basis for adaptation, they should *not* be directly applied to most artisanal operations without prior baseline assessment and appropriate modification.

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ACRONYMS

BGR	Federal Institute for Geosciences and Natural Resources
OMGR	Rwanda Geology and Mines Authority
ASM	Artisanal & Small-Scale Mining
OSH	Occupational Safety and Health
PPE	Personal Protective Equipment
CTC	Certified Trade Chain
NRD	Natural Resource Development
JOSHC	Joint Occupational Safety & Health Committee
JSA	Job Safety Analysis
PM	Preventative Maintenance

1 INTRODUCTION

In association with the pilot project "*Building Best Practice in Rwandan Mineral Production*," the Rwandan Geology and Mines Authority (OGMR) and the Federal Institute for Geosciences and Natural Resources (BGR) of Germany are currently implementing a program to foster ethical standards and good practice in the minerals sector of Rwanda, thereby enabling certification of origin of minerals purchased by industrial end users.

With extensive commitment from BGR, the German Government seeks to establish a minerals certification system to guarantee the origin and ethical quality of stanniferous metals throughout Central and Eastern Africa and beyond. The CTC further supports international initiatives to improve governance in extractive industries yet is unique in its inclusion artisanal and small-scale mining (ASM) and focus on stanniferous metals[1].

Through the OGMR/BGR pilot project, three Baseline Audits of Rwandan Mining Companies were undertaken in 2009 in order to ascertain the initial level of compliance with the Certified Trading Chain (CTC) standards set and identify critical issues where expert technical assistance is required.

Recommendations from this work highlighted, among other topics, the need for expert assistance in development of:

- Company guidelines for adherence to good corporate governance
- Security policies and guidelines for a security management system
- Company policies and procedures for gender equity in employment and against bribery and illicit payments
- Occupational Health and Safety System

This Report describes work undertaken to develop an Occupational Safety and Health (OSH) System appropriate to five Rwandan companies to support their certification under the Certified Trading Chains (CTC) program. The OSH System provides the policies, procedures, defined roles and responsibilities and systems of accountability needed by Companies to make progress towards a safe and healthy working environment, increased profitability and maintenance of their legal and social license to operate.

It is essential to recognize that, despite large artisanal mining workforces of 200-1000 and widespread OSH hazards and risks, most Rwandan Companies participating in the pilot project have far more organizational, technical and financial capacity than the typical artisanal mine site and small mining company in the region. As such, the OSH Policy, Guidelines and Programs put forth herein are tailored *specifically* to the target companies and, although they provide a useful basis for adaptation, they should *not* be directly applied to most artisanal operations without prior baseline assessment and appropriate modification.

1.1 Justification and Motivation

Practical and easy-to-understand guidelines for improvements in small scale mines are critically needed in the artisanal and small scale mining (ASM) subsector. Fatalities, serious injuries, occupational illness and disease as well as child labour, alcohol and drug abuse, exploitation and severe gender inequalities are common characteristics of artisanal mine sites.

Although most participating companies are formal, well organized and possess a comparatively high degree of technical expertise, their mineral production is strongly reliant on between 200

[1] Garrett, N., 2008, *Certified Trading Chains in Mineral Production & the Extractive Industry Transparency Initiative*, Synergies and Scope for Collaboration.

and 1000 men, women and children. Efforts to formalize work arrangements with artisanal miners, eliminate, prevent and control safety and health risks and establish good work practices go hand-in-hand with sustainable and responsible mineral development.
Implementation of OSH Policies and Programs will require cooperation and effective communication between the Small Mining Companies and artisanal miners and other facets of the informal workforce as well as Government and communities. More significantly, the OSH System is founded on promoting a positive change in mind-set. A commitment to building a culture of safety and health in small mines ultimately requires a commitment to integration of artisanal miners into the formal system.

Based on international best practice and existing conditions and needs of Rwandan Mines, The proposed OSH Policy and Programs fill a critical gap in small scale mining operations while promoting measures and steps to support the attitude change and capacity development that is so crucial to improvements in the subsector.

1.2 Goals and Objectives

The Primary Goal of this Consultancy is to support compliance with the CTC Standard Set through development of practical, workable and context-appropriate OSH Policies and Guidelines for Five Small Mining Companies in Rwanda.

Main objectives of this assignment are to.

1. Support formal integration of artisanal miners into small mining operations.
2. Develop basic, easy-to-understand templates and guidelines for Companies to customize, adapt and adopt in support of safe and healthy work environments, improved productivity and profitability and compliance with CTC standards.
3. Provide a useful guide for Government and foundation for development of ASM-appropriate strategies policies, laws and regulations, particularly with respect to OSH.
4. Create a model OSH framework to support the practical implementation of CTC for adaptation and use in other ASM contexts and countries, e.g. DRC.

The outputs from this work are unique with respect to small stanniferous mines and provide an invaluable basis for OSH improvements in artisanal and small scale mines throughout the World.

1.3 Methodology

This work was undertaken using a combination of methods including:

- Desk research on published and unpublished reports on the Rwandan companies and the minerals sector, inclusive of its laws and regulations, the CTC standards set and results of baseline audits and international best practice in terms of OSH and ASM.
- Preliminary meetings and semi-structured interviews with company management, government officials and other stakeholders.
- Field-based assessment of conditions, issues and opportunities at participating mining operations throughout the country including discussions and interviews with staff members in charge of OSH, local medical personnel, artisanal miners and their gang-leaders and community members involved and/or affected by the mining activities.
- Consultation and Feedback Workshops with company representatives and OGMR personnel to propose, review and discuss model OSH policies and guidelines appropriate and implementable given the reality on the ground.
- Sharing of draft written outcomes with the beneficiaries and receiving and incorporating feedback, suggestions, inputs and comments.

1.3.1 Development of OSH Templates and Guidelines

Based on the analysis of information collected during the course of this work, the primary outputs are OSH Policies and Programs under the umbrella of comprehensive "*Occupational Safety and Health System for Small Scale Mines in Rwanda*." These include:

- **Draft OSH Policy.** A template for a general OSH Policy has been provided as a basis Companies to customize and adopt for their specific situations. A complimentary HIV/AIDS Policy is also suggested.
- **OSH Roles and Responsibilities.** Based on the current organizational arrangements, specific accountabilities and responsibilities along lines of authorities and for workers, visitors and suppliers are outlined. These can be readily integrated into job descriptions.
- **OSH Program Guidelines** for:
  - Preventative Maintenance Program.
  - Incident/Accident Investigation Program.
  - Early and Safe Return to Work Program
  - Communication Model.
  - Workforce Training Program, inclusive of First Aid Training.
- **Guidelines for Continuous Improvements**, to provide a basis for monitoring, evaluation and adaptation of the OSH System including:
  - Workplace Inspection Program with a detailed checklist.
  - Accountability System.

Given their significance, *additional* essential topics beyond that required of the scope of work were included in the outputs. These included:

- **Guideline: How to Conduct Hazard and Risk Analysis**. As the foundation for the OSH System, simple tools and step-by-step guidance needed for preliminary and ongoing assessments of hazards and risks is provided. This is supplemented by a Training Module on "*How to Protect, Control and Protect from Common Risks*".
- **Emergency Response Procedures.** Given the seriousness of hazards and risks in small scale Rwandan mines, emergency response procedures are critical to protecting workers from undue harm. This has been integrated as a Training Module on "*How to Respond to an Accident, Injury or Sudden Illness*".
- **Safe Working Procedures** for specific tasks and functions are needed to guide all workers in safe practices. These procedures are alluded to in various sections of the templates and guidelines and further discussed under the "*Workplace Inspection Program*". Specifically, the Workplace Inspection Checklist is developed in sufficient detail that these procedures can be extracted and adapted into safe work procedures.
- **Technical Issues and Related Preventative/Corrective Actions**. Although OSH Policies and Guidelines are provided, gaps in technical knowledge and skills are profound in the Rwandan mining workforce. To counter this gap:
  - *Specific issues* (e.g. ventilation, stability, explosives etc) are referred to throughout and a table has been included on common hazards and risks in small scale mines.
  - The *Workplace Inspection Checklists* generally cover "what should be done" and point to key issues and suitable responses in the ASM context.
  - *Useful Sources of Information* are outlined in Annex One, which includes free and downloadable manuals and handbooks specifically written in simple, pictorial form to help identify hazards and risks in small scale mining and appropriate preventative and corrective actions.

1.3.2 Timetable

The work was completed over the course of eight weeks as shown in Table 1.

Table One: Schedule of Work

Calendar week (2010)	20		21		22		23		24		25		26		27	
Activities:																
Fieldwork in Rwanda																
Desk research																
Initial Meetings with OGMR & companies																
Meetings with various Stakeholders																
Field visits at mines & concessions																
Feedback/Implementation workshop with OGMR & Companies																
Preparation of written draft policies & guidelines																
Sharing draft policies & guidelines with companies																
Receiving final comments from companies																
Preparation of policy & guidelines and sharing with companies																
Preparation of the Final Report to BGR																
Submission final report to BGR (15/07/2010)																

1.3.3 Consultants Background

This Consultancy was undertaken by Projekt Consult GmbH and its team.

Projekt-Consult GmbH, a Germany-based consultancy company, has been working in the field of technical and financial co-operation for over 30 years (www.projekt-consult.de). Core activities are (small-scale) mining sector development and policies as well as energy supply in rural areas.

Translating modern OSH standards into practically applicable standards for the artisanal and small-scale mining sector is a key expertise of projekt-consult which has been demonstrated by internationally recognised publications and training materials on OSH in organisation of safety and health in the mines, personal protective equipment and first aid, safe mine design and mining methods, open cast, sub surface atmosphere and ventilation, safe handling of explosives and blasting operations (projects in Madagascar, Mongolia, Senegal, Peru and Bolivia).

2 SMALL SCALE MINING IN RWANDA

Prior to 1994, mineral commodities typically provided 10% of Rwanda's export earnings, mainly from concentrates of tin, tungsten, and colombium-tantalum ores and gold bullion. Although the Rwandan minerals sector has largely recovered, many obstacles continue to impede optimal use of its mineral endowments. Among them include decreasing high-grade ores, lack of sufficient capital, periods of civil unrest, massive population displacement, a 65% poverty rate, a shortage of skilled labour, the country's landlocked status and transportation costs (amongst the highest in Africa), recent increases in oil prices, persistent risks of Hutu extremist insurgency and involvement in two wars in the Democratic Republic of Congo.

In 1999, mining accounted for less than 1% of GDP and tungsten and tin ore and concentrates accounted for 5% of exports. In 2000, the government privatized Régie d'Exloitation et de Développement des Mines, the state mining exploration company[2]. In the same year, mineral production estimates rose to 345 tons of tin ore (metal content, compared to 260 in 1998 and 400 in 1993); tungsten ore, 130 tons (from 49 in 1996 and 175 in 1993); cement, 69,600 tons; columbite-tantalite ore and concentrate (gross weight), 83,000 kg (down from 224,000 in 1998); and gold, 10 kg. Rwanda also produces natural gas while volcanic deposits in the west and northwest contained potassium minerals suitable for fertilizer production. Exploitation of the country's peat deposits has also escalated to meet subsistence farming needs while Rwanda's deforestation rate being the third highest in Africa. Cement was Rwanda's top industry in 2002, and tin ore was the fourth-ranking export commodity.

The Rwandan mineral industry consists mostly of a number of small companies, cooperatives and individual artisanal miners who produce ores and concentrates from locations dispersed across a 30 kilometre wide zone that extends east–west through Kigali. While some areas are legally operating, while most activities are only marginally mechanized, largely inefficient and characterized by widespread occupational safety and health risks.

2.1 Occupational Safety and Health in Five Rwandan Mining Companies

Five (5) Rwandan mining companies holding six (6) mining concessions are targeted for the CTC pilot intervention. Most of the companies have essentially been working as buying-and-trading enterprises, although many efforts to formalize production and processing have been observed and show promise in terms of commitment to improved practices. Most companies each formally employing around 100 workers and buy from between 200 and 1000 artisanal miners per site.

Currently, all mining operations have a similar structure with slight variations on that shown (see Figure One).

In all cases, the company holds the concession and has the exclusive, legal right to sell minerals produced on these areas. To varying degrees, the company provides basic infrastructure, tools, equipment and formal management and supervision through permanent employees.

The actual mineral production is undertaken by contracted gangs of artisanal miners (2 to 60 miners per gang). These gangs are led/represented by a Gang Leader who sells the mineral product for an agreed price to the company and distributes the received payments among his/her gang members. Although some companies make formal arrangements with gang leaders, no documentation or arrangements with artisanal workers themselves have been made.

[2] *Encyclopedia of the Nations at: www.nationsencyclopedia.com/Africa/Rwanda-MINING.html*

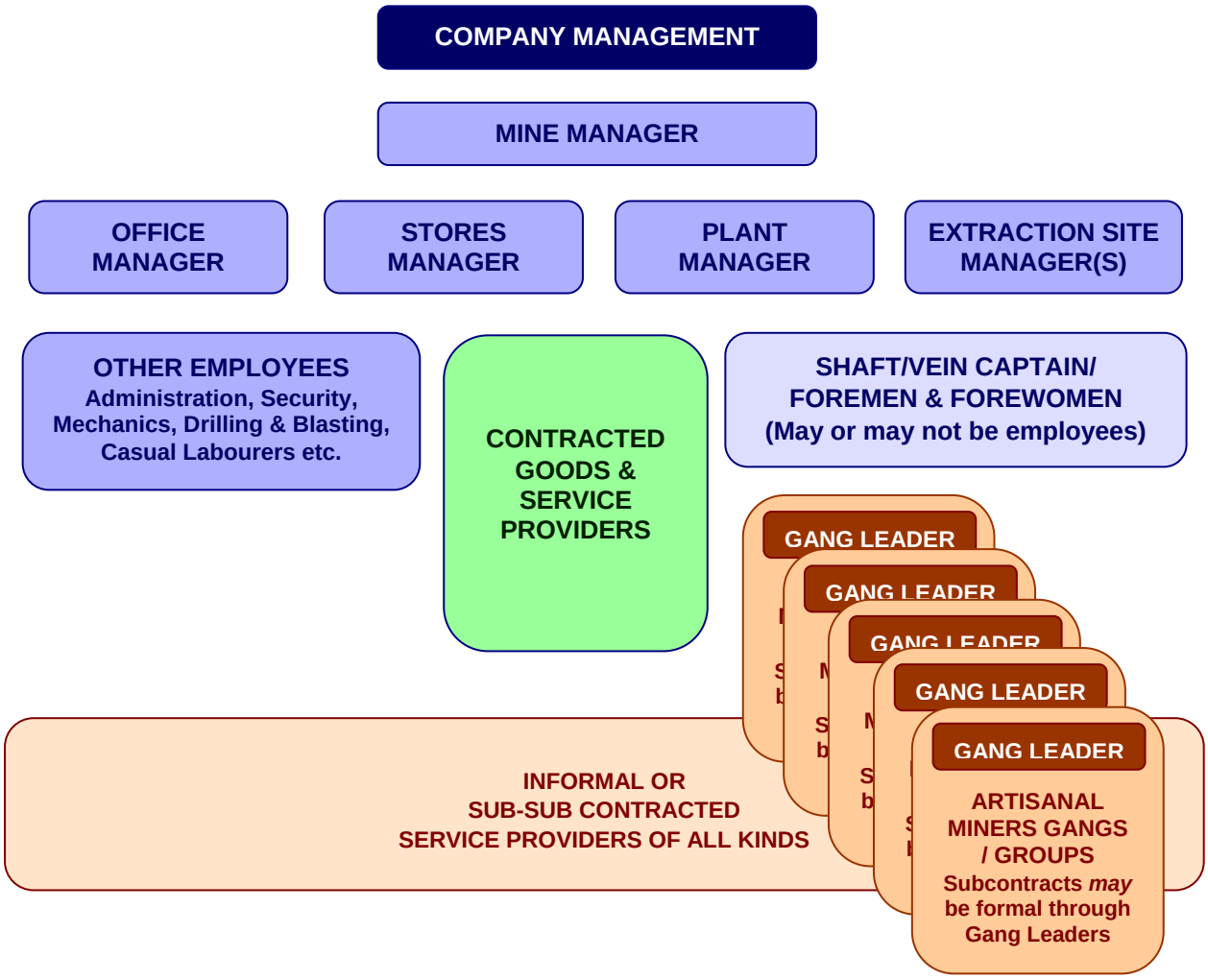


Figure One: Common Organizational Structure of Small Scale Rwandan Mines.

The informality of this arrangement is cause for several concerns including:

- *Lack of fairness in distribution of earnings from production.* Companies entrust Gang Leaders to appropriately disseminate money while, if funds are inappropriately allocated, the artisanal miners themselves may be led to blame the Company.
- *Lack of accountability*. As the artisanal miners and workers themselves are not known to the Company, there is little accountability for their practices. Risks are significant in the absence of systems for accounting for persons working underground, undercutting of weak rock or soil, work under the influence of drugs or alcohol and many more.
- *Difficulty controlling and managing activities.* Although the hazards and risks are numerous, specific examples include no restrictions on child labour, undercutting of weak rock, explosives handling, preparation and use by any persons on-site, exploitation and mistreatment of women, potential for rushes, and many more.

The Companies differ in their sense of responsibility for women and men miners, informal workers and their activities. In a few mines, artisanal miners (particularly those working underground) are treated almost equally to employees while many operations view them as independent contractors whose only purpose is to provide and sell minerals. Most Companies are not properly equipped with the resources and know-how to formalize work arrangements.

BOX ONE: OSH Standards in the CTC Compliance Audit

With respect to occupational safety and health (OSH), the following standards and indicators were used to carry out the 2009 "*CTC Baseline Compliance Audit*":

Ensure that no child labourers (age under 16) work on company sites.

Provide evidence that your company actively guards against the hiring of child labour

Preliminary indicators:

1. Records for all employees documenting their date of birth; verify that at the time of employment employees are/were not below the age of 16 years*.
2. Evidence that the people responsible for hiring at the mining sites are aware of the policy not to hire anyone below the age of 16 years.

Provide essential protective and production services to support the work of artisanal miners.

Provide evidence that you provide protective and production to support the artisanal miners working on your concession

Preliminary Indicators:

1. Documentary evidence that the company has bought and distributed PPEs and production equipment to workers.
2. Evidence that all workers have PPEs and production equipment (by inspection).
3. Evidence that the artisanal miners are being assisted in being productive, through the provision of such services as e.g. blasting, opening up new ground with excavators, closing up used areas with bulldozers.

Ensure occupational health and insurance in all company operations.

Provide evidence that you do all you can to ensure good OSH and insurance in all your operations

Preliminary Indicators:

1. Documentary evidence of a company policy and procedures regarding health and safety.
2. Evidence of awareness of health and safety requirements by workers/miners (verbal, training records, observation etc.).
3. Documentary evidence that the company provides health and safety training to the workers/miners (e.g. training materials, attendance registers).
4. Documentary evidence of the working of health and safety procedures through handling of past incidents.
5. Evidence that the company tries to keep work-related injuries at a minimum (e.g. warning signs, training, management responsibility, sanctions for non-compliance and rewards for compliance)
6. Evidence of a high level of awareness of workers/miners for the need of proper health and safety handling.
7. Evidence that workers/miners have the knowledge and skills for efficient production.

Provide training for employees and contractors on OSH and effective use of on-site facilities.

What documentary evidence can you provide to show that you train employees and contractors on safety, health and effective use of on-site facilities?

Preliminary indicators:

1. Documentary evidence that company has dedicated staff to give workers/miners regular training on health and safety and efficient production methods (e.g. names of staff, record of the qualification of the training staff, job description of the staff, HRD records).
2. Record that the company has given training to miners/workers (e.g. manuals, attendance registers etc.).

These standards and indicators were integrated throughout the OSH Policy and Programs that comprise the OSH System for Rwandan Mining Companies.

2.1.1 Current OSH Conditions

Various mine visits have been undertaken during the assignment. The observations can be summarized as follows (see Preface):

Major occupational hazards and risks are present at each site and intervention is needed. However, two Mines have taken important steps to formalize some OSH systems (and work arrangements with artisanal miners), which are a useful example for the other operations.

OSH supervision is good and the mine has an OSH Manager who also undertakes training for miners and employees. The miners and employees receive and actually use Personal Protective Equipment (PPE), including proper headlamps underground.

A significant OSH issues relates to opening and cleaning of colonial tunnels and shafts. Roof and wall stability is unpredictable and, although miners are very experienced, they are paid per kg of ore concentrate and temptation to advance too fast in rich or promising areas and neglect construction of proper timber supports is likely.

An experienced expatriate OSH manager and trainer was employed for several month to set up an OSH system in one mine, inclusive of sensitizing and training local mine personnel and artisanal miners on OSH issues. Major remaining OSH challenges include: lack of appropriate equipment (such as ventilation ducts and fans); safe working procedures (and their enforcement) particularly in opening and cleaning old sections of the underground mine; lack of commitment of many artisanal miners to OSH, lack of multiple entrance/exits to underground mines and no policy on HIV/AIDS.

At another mine a second-hand ambulance was recently bought, which is parked on stand-by at mine offices. This initiative is highly appreciated although much more should be done to ensure this ambulance is used less frequently.

Of urgent concern, the widespread practice of undercutting steep pit walls to follow veins without insufficient (or any) timber supports. Access to the pit floor and undercuts is treacherous and miners often carry heavy loads (e.g. ore) on their heads while doing so. Old rails are used to carry the excavated material. However, the rails are in bad condition (although the company claims to maintain them), and derailing and crashes of the heavy (>1 ton) mining carts are common. PPE is rare (even proper or any footwear) and hard hats appear altogether absent.

The Mine came under new management that demonstrates greater concern for issues such as OSH, gender and community relations. A highly experienced expatriate manager has also been mobilized for permanent residency at the mine. His primary responsibility is to organize exploration but is also tasked to reorganize the mine's operational structures and improve OSH standards. The company is currently bringing in more PPE and lamps for the miners (at the time of this mission, the container with PPE was detained at customs as authorities were not convinced that proper footwear and rubber-boots are "mining equipment", and therefore tax free).

(Male) miners have health insurance. However, many women are informally subcontracted by the men to provide support services, such as carrying ore and equipment, etc. These women are basically ignored by the mining company, which has several negative implications, including frequent sexual harassment and exploitation as well as lack of PPE and health or social insurance.

A proportion of mining activities is currently being undertaken in older mine workings, which are progressively reopened as they are cleaned out. As for other underground mines, this creates unpredictable hazards. At mines where both underground and open pit mining is widespread

and undercutting of pit walls is common and, at the time of the mission, a serious (but not fatal) accident occurred wherein a large block of weathered rock collapsed on two workers (one woman and one man). Underground shafts follow veins, often down to more that 100 meters depth and timber supports are used (even if the supply with timber is difficult) but is generally based on the miners experience and "feeling" rather that on technically based concepts. The mines only have one access/exit, which can prove fatal in case of a tunnel collapse. Access to the mining area is open to any worker and very crowded. Many children, animals, "service-providers", etc, are loitering around the unsecured pits.

When mining activities are widely scattered across the area and the miners are basically undistributed to extract and sell the minerals. Currently, no blasting is being undertaken. Water in the mines is significant, providing an additional challenge in terms of both profitability and safety.

Inherited good infrastructure from the previous owners the mining company is however concentrating on buying, processing and trading the material and has shown little regard for the circumstances faced by artisanal miners producing this material. Recently, areas have been cleared and opened up to try and shift artisans from dangerous areas (as they are progressively stabilized). Mining areas are difficult to access, especially during wet season, miners work unsupervised and are neither trained or sensitized on OSH issues. Multiple types of accidents, including those resulting in fatalities, were reported.

2.2 The Legal and Regulatory Framework

Occupational safety and health in small scale mines receives limited attention in the legal and regulatory framework of Rwanda.

2.2.1 Rwanda's Mining Policy and Laws

The current "*Law on Mining and Quarry Exploitation*, No. 37 of 2008" gives little reference to OSH with the exception of stating the role of various authorities.

The law covers the following areas[3]:

- Classification of mining operations
- Types of licenses and the rights and obligations these licenses confer on the licensee
- The role of different authorities
- Provisions for land use rights, environmental protection, mineral trading etc.

The law provides for four types of licenses, namely:

- ***Prospecting license***, which grants exclusive prospecting rights for a period not exceeding two years. This license may be converted into a research license. The prospecting license area should not exceed an area of 1000 square kilometres.
- ***Research license***, which grants rights for mining research, for an indefinite depth. The license may be valid for a period not exceeding 4 years, and renewable once for another four years. Every two years the license holder must submit a research report. The license specifies the mineral substance and the aerial extent covered, which should be a square whose sides do not exceed two kilometres.
- ***Mining exploitation license***, which is a small mine exploitation license. This license is valid for a period not exceeding five years, and renewable indefinite times for periods not exceeding five years at a time. The aerial extent covered by this license is a square whose sides should not exceed two kilometres. The exploitation depth may not exceed 40 metres, but, if there is technical and economic reasons to exceed this depth, then the licensee may apply for a concession license.
- ***Concession license***, this confers exclusive right to research and mine specified minerals, for a specified aerial extent (between 100 and 400 hectares) and an indefinite depth. This right is granted exclusively for industrial scale mining. The holder of a research license of an area has the right to apply for a concession license for the same area. This license will be valid for 30 years, and renewable.

Fair compensation is due to owners or lawful users of land from the license holders if the activities will impact on the land use. Environmental impact assessment (EIA) certificates should accompany all application for mining licenses, except prospecting. The administration of the EIA is the responsibility of the REMA.

However, there are currently no guidelines for the mining sector, and it is reported that they will start developing them soon. It is reported that in the Rwanda Development Board (RDB) there is also a special unit that facilitates the smooth implementation of the environmental requirements for the mining sector.

[3] *Compliance Audits of Mining Companies in Rwanda to the CTC Standards Set – WMP Baseline Audit Report, March 2010 BGR-OGMR Pilot*

All license holders except for prospecting are entitled to trade the mineral products from their license area. Trading may also be done by holders of smelting and screening licenses as well as purchasing and selling licenses (provided for in this law). This excludes export. There are customs procedures that need to be satisfied for the purposes of exporting mineral products. One of these is the requirement to have a "Certificate of Origin" which is issued by the Ministry of Commerce.

Taxes, duties and levies are payable to the Rwanda Revenue Authority (RRA). Taxes payable include "pay as you earn" (PAYE), company income tax, and value added tax for goods sold and purchased. A special social fund contribution from employees, for victims of genocide is also collected by the employer and remitted to the RRA. Other payments made by companies include the national social security fund contributions for all employees.

It is important to note that the mining contracts held by the mining company looked at, are special contracts and do not necessary conform to the current legislative regime. These contracts were designed as part of the process of privatising state mining activities in a way that was meant to encourage investment in the country.

2.2.2 Labour Policy and Laws

The law regulating OSH as part of the country's Labour Law is currently very general. Ministerial Orders which should provide clear and practical guidelines are currently being drafted and discussed but could not be made available for external review.

Box Two lists the provisions in the Rwandan Labour Law relevant to OSH.

2.2.3 Relevant International Conventions

There are currently 21 ILO Conventions concerning OSH.

The most relevant conventions for mining are:

- ILO Convention No.176, Safety and Health in Mines Convention, 1995
- ILO Convention No 155 concerning Occupational Safety and Health Convention and the Working Environment, (1983)
- ILO Convention No. 161, Occupational Health Services Convention, (1985)
- ILO Convention 187, Promotional Framework for Occupational Safety and Health Convention, (2006)
- ILO Convention No. 138 on the Minimum Age for Admission to Employment and Work.
- ILO Convention No. 182 on the Worst Forms of Child Labour

OMGR Authorities and Mining Companies would benefit from increased familiarity with these conventions.

It is important to recognize that the International Labour Organization has a number of useful resources for OSH in the minerals sector. Although more targeted to large scale mining, the "*ILO Code of Practice Safety and Health in Opencast Mines*", and the "*Code of Practice on Safety and Health in Underground Mines*" (1991).

Additional resources appropriate for artisanal and small scale mining are listed in Annex One.

BOX TWO: RELEVANT PROVISIONS IN RWANDAN LABOUR LAW

Rwandan Labour Law (N° 13/2009 of 27/05/2009) primarily relates to small scale mines under Title V: Health and Safety at the Workplace under Chapter One: Prevention Principles. Important provisions are shown below.

Title V: Health and Safety at Workplace; Chapter One: Prevention Principles

Section One: Employer's Responsibilities

Article 90: Cleanliness at work place
Working premises shall be kept clean and equipped with health safety and protection facilities.

Article 91: Protection Equipments
The employer shall put at the worker's disposal all necessary and appropriate protection equipments and look after their correct use. He/she must know ways and means to protect against hazards and train workers on such ways and means.

Article 92: Premises and equipments not detrimental to worker's health
At workplace, premises shall comply with the health and safety standards.
Before these premises are built, the construction, extension, transformation or renovation plan shall be submitted to the Ministry in charge of Labour for inspection and certification as to whether health and safety standards, at workplace, are complied with.

It is forbidden to import, display, sell, lease out, give away under any circumstances or to use appliances, machines and parts of machines which were manufactured or imported contrary to standards aimed to ensure protection of worker's health and prevention of hazards.

Article 93: General and specific conditions for health and safety at the workplace
An order of the Minister in charge of Labour shall determine the general and specific conditions for worker's health, prevention of and protection against hazards at workplace.

Article 94: Declaration of occupational risks
The employer shall declare to the social security organ and to the Labour Inspector of his/her jurisdiction, within four (4) working days of occurrence, all occupational risks or occupational diseases noted.

Where the employer fails to make a declaration, the person who is the victim of the accident or suffers a disease or his/her legitimate representatives may declare occupational risks within a period not exceeding two (2) years from the date of the occurrence of the accident or disease. Any employer who uses working processes likely to cause professional diseases shall notify the issue to the Labour Inspector and to the social security organ, before starting using such working processes.

Section Two: Committee on Health and Safety and Medical Services at Workplace

Article 95: Setting up the Committee
An order of the Minister in charge of labour shall determine those institutions, which shall have committees on health and safety and medical services at workplace as well as modalities for their functioning.
The employer must create a health and safety committee in his/her institution as well as modalities for their functioning.

Article 96: Emergency Box and Medical Care
The employer must put at the disposal of workers, at his/her own cost, an emergency box of first aid needed in case of accident.

In case of work accident, the employer must evacuate the injured and the patients to the nearest health centre.

2.3 Integration of Artisanal Miners in Formal OSH Systems

Main components of a comprehensive *Occupational Safety and Health System* for small scale mines in Rwanda are provided in the remainder of this report. The success of the OSH Policy and Programs is clearly contingent on Company capacity and will to bring artisanal miners into the fold. The approach to integration of artisanal miners in the OSH system is primarily based on explicit recognition and mainstreaming of ASM throughout OSH System components. The approach builds upon the existing organization of labour and recognizes the challenges inherent in both the Companies and informal workforce.

INFORMALITY OF WORK ARRANGEMENTS WITH ARTISANAL AND INFORMAL WORKERS REPRESENTS THE GREATEST THREAT TO SAFE AND HEALTHY WORKING CONDITIONS IN RWANDAN MINES

This was integrated throughout the OSH System as follows:

- Explicit incorporation and recognition of artisanal miners and the "informal workforce" in the OSH Policy, inclusive of their consideration in health insurance, training and provision of related supervision and PPE, among others.
- Development of the OSH Programs as simple "how to" guidelines, which can be readily translated, adapted and even simplified further.
- Recognition of the roles, responsibilities and accountabilities of *all* workers, inclusive of artisanal miners and informal workers as well as gang leaders (in a supervisory role) and the responsibility of the Company to ensure that appropriate resources are availed.

A concerted effort on the Company's part will be crucial in order to establish formal linkages (with workers as well as gang leaders) and to develop a greater sense of organization and accountability in *all* facets of the workforce. Ways to support this are described below.

2.4 Recommendations

CTC target companies generally recognize the significance of formal integration of artisanal miners and informal workers in achieving progress towards safe and healthy work environments. However, the Companies have varying degrees of technical and financial capacity and, more importantly, differing levels of interest and motivation to formalize artisanal miners and support OSH improvements in their operations. Recommendations are put forward in the following areas.

2.4.1 Organization Formation and Strengthening

This is the most significant need of all participating Rwandan companies. Formal arrangements with Gang Leaders should be established as a first step but these must extend to individual women and men in the artisanal mining *and* informal workforce. Establishment of formal, gender-responsive groups, registration systems and issuance of identi-cards are crucial to OSH outcomes as well as sustained and reliable productivity and positive relationships with communities around mining areas, however, simply setting up the structural components of organization and does *not* equate to their effective functioning.

Companies can take basic steps to form work groups yet are ill prepared to institute mechanisms and build capacity to make them effective and sustainable. There are inherent risks in promoting formal groups without adequate support for their strengthening. If groups fail to perform with respect to work agreements, formal roles and responsibilities and benefit sharing, the Company may bear the brunt of blame for any dysfunction, disharmony with and between workers can result and a reticence towards formal structures may continue for several years.

A dedicated, gender-responsive intervention to help Companies establish, strengthen and cooperate with a formally integrated ASM workforce is critically needed.

2.4.2 Technical Assistance and Training

Most companies employ a few technical staff who *may* know how to prevent and mitigate occupational safety and health risks. The majority, however, have limited knowledge and skills to do so, a situation exacerbated by limited formal expertise throughout the country. Even where some technical expertise exists, these key Persons hold demanding and crucial

positions in the mine, leaving little opportunity for them to institute and drive necessary measures outlined in the OSH system and transfer their knowledge and skills to the general workforce. In any event, a technical expert does not, by any means, equate to an effective trainer, particularly in the context of a largely informal workforce with varying levels of literacy and formal education.

Although references to simple, ASM appropriate technical training material are provided in Annex One (and main technical solutions are alluded to throughout the guidelines), this written material is only a foundation for training. Any trainers must be experienced in developing positive safety attitudes as well as building technical knowledge and skills to use safe work procedures and take appropriate preventative and corrective actions to any risks identified.

Support for technical training in OSH issues in the format of training of trainers would yield substantial progress towards achievement of OSH Policy objectives in CTC Companies. This should target, *at the minimum*, a critical mass of OSH Officers, site managers, gang leaders and other supervisors to a level where they could continue training, either formally, or via day-to-day guidance and hands-on coaching during their regular functions.

2.4.3 Legal and Regulatory Reform

Legislation appropriate to artisanal and small scale mines, and OSH in particular, is essentially non-existent in Rwanda. Given the distinct differences between small companies and dispersed artisanal miners, two licensing modalities will likely be needed for promote formalization of ASM across the Rwandan minerals sector. In the case of the latter, a comprehensive assessment of informal sites outside of the CTC Company concessions may be warranted.

With respect to small scale mines, OMGR could readily incorporate, adapt and adopt standards (particularly those put forward in the workplace inspection checklist) in order to develop appropriate regulations. Consideration of environmental and social parameters, inclusive of those related to gender, will be required.

Prior to reforms, OMGR should be aware of challenges in supporting formalization and legalization of ASM throughout the World. These can largely be attributed to[4]: (i) copy-and-paste approaches to legislation that does not reflect country- or context-specific reality; (ii) lack of political will to develop and implement enabling legislation; and (iii) lack of financial and technical resources to effectively regulate and support ASM. In-depth consideration of this reality in development of laws and regulations appropriate to Rwanda is more likely to support positive outcomes.

2.4.4 OSH Requirements under CTC

The OSH Policies and Programs outlined in subsequent sections are tailored to those participating Rwandan Companies. Although still categorized as “ASM Operations”, these Companies are distinctive in terms of their technical and financial capacity, degree of organization and organizational structures. I.e. they differ from the status quo of ASM in many countries and contexts (including other sites in Rwanda).

It is strongly recommended that a high degree of flexibility be used in the application of the OSH Policy and Programs. Although a useful model and guide, many ASM sites are far less equipped to fulfil these OSH requirements and heavy adaptation will be needed. A simplified version in-line with challenges faced at the more “artisanal” level of the spectrum should be developed (in conjunction with related baseline audits or assessments) prior to their widespread use.

[4] Hinton, J., 2009, *National Strategy for the Advancement of Artisanal and Small Scale Mining in Uganda*, Unpubl. report, Ministry of Energy and Mineral Development, Kampala, Uganda, 142p.

3 COMPANY COMMITMENTS TO OCCUPATIONAL SAFETY AND HEALTH

Companies owning and operating mines have an ethical and legal obligation to safeguard the health and welfare of their workforce. The business case for adopting OSH policies and practices is also clear:

- Efforts to prevent and respond to occupational injuries and illness can increase loyalty and commitment, increase productivity and improve the company reputation.
- The risk of rock falls, pit wall and tunnel collapses is high in many Rwandan small mines. In addition to potential for catastrophic losses in life, such incidents reduce access to ore (in some cases permanently) and decrease profitability of the mine.
- The number of women and men working on company sites is high (200-1000 people). Poor sanitation and hygiene at worksites can lead to the spread of highly infectious diseases such as cholera and typhoid, potential halting production completely and amounting to high medical treatment costs.
- The financial and reputational costs of implementing OSH systems are usually far less expensive than costs of medical treatment, losses in production and poor credibility.

Because production and profitability of most Rwandan mining companies rely heavily on a mostly informal, artisanal mining workforce, bringing these women and men miners into the fold through formal, gender-responsive work agreements and changing attitudes towards OSH should be an immediate and high priority.

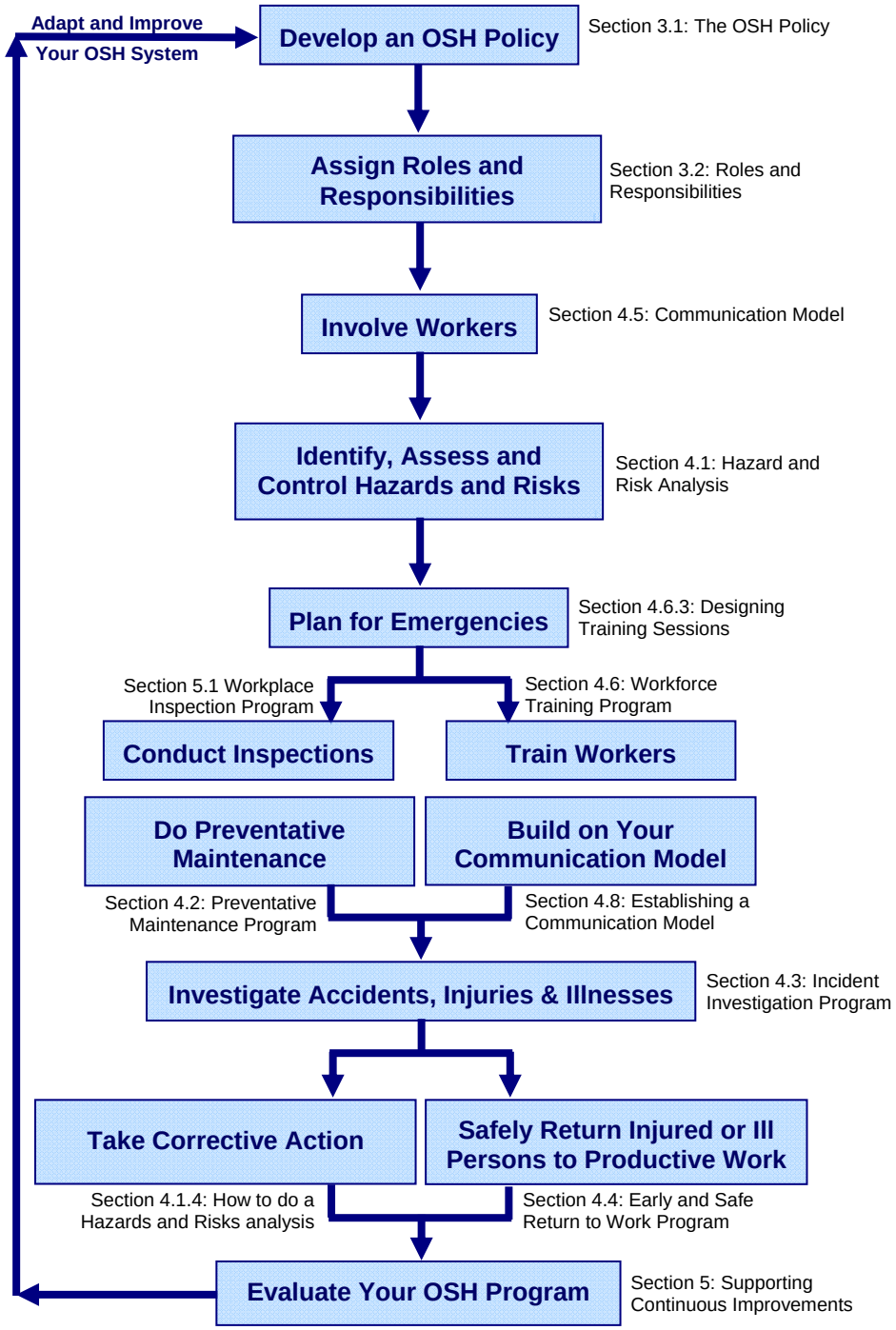
TO FULFILL YOUR OSH COMMITMENTS, FORMALIZING WORK ARRANGEMENTS WITH WOMEN AND MEN ARTISANAL MINERS AND OTHER SUBCONTRACTORS MUST BE A PRIORITY ACTION!

Building a culture of safety will take time and a dedicated effort but is essential to fulfilling safety and health commitments and, ultimately, the success of mining operations. Adopting an OSH Policy and initiating OSH programs with all formal and informal workers is the first step in the right direction.

To establish a culture of health and safety through good OSH systems, companies should:

1. **Adapt the Policy and Guidelines to Your Operation**. Each of the mining companies participating in CTC is different in terms of resources, capacity and the nature of their operations. When you adapt the OSH Policies and Programs *together with* key responsible persons, your workforce will begin to increase their awareness, capacity and commitment to OSH.
2. **Develop and Distribute an OSH Policy Manual**. Once the Policy and Programs are adapted, they can easily be compiled into a single manual for managers, supervisors and other responsible persons. Translation into Kinyarwanda and/or French is needed.
3. **Communicate the Policy, Roles and Responsibilities and Procedures.** Every woman and man on site should know and understand the policy, their own responsibilities and who to report to in the case of an occupational injury or illness..
4. **Implement Safe Working Systems** including those related to training and sensitization needed to build capacity and improve safety attitudes as well as preventative maintenance, incident response and reporting, early and safe return to work, workplace inspection and monitoring and evaluation.

The following chart provides a helpful outline of main steps to follow to develop an OSH program for your mine.



FigureTwo: Main Steps in Developing an OSH System

3.1 The OSH Policy

A useful example of an OSH Policy and related accountabilities for mines in Rwanda is shown below. Once you have adapted and adopted an OSH Policy for your operation, it should be translated, printed and distributed in visible areas (e.g. notice boards) around the operation and communicated to the workforce using tools described in the Communication Model (Section 2.8). Because of their importance to overall health and welfare, companies are also encouraged to adopt an HIV/AIDS Policy (Box 3), Gender Equality Policy and Environmental Management Policy.

3.1.1 Draft General OSH Policy

We believe that safety and health in our operations is of prime importance to the success of the Company. We recognize our duty as an employer, community member and positive example for other mining companies in the region and we aim to ensure the occupational health, safety and welfare of all employees, contractors and subcontractors as well as visitors and members of the public who may be affected by our activities. The Company will follow Rwandan legislation and internationally accepted norms.

We also make a commitment to:

1. Occupational Safety and Health (OSH) as an integral part of our company's work. It is there to protect all of our employees, contractors, subcontractors, visitors, clients, property, the environment and the public
2. Provide necessary resources to implement and communicate our OSH Policy and Safety and Health Systems to all Persons at our operations.
3. Ensure all women and men on our sites are aware of and commit to their individual responsibility for his/her own safety and health as well as for his/her fellow colleagues. Accepting this responsibility is a condition of working in our operations.
4. Provide necessarily OSH sensitization, education and training to each employee, subcontracted worker, service provider or visitor.
5. Encourage and welcome any suggestions, concerns or complaints about OSH from any employee, subcontractor, worker, visitor or other party.
6. Make sure all workers have and use Personal Protective Equipment (PPE) that is suited for their jobs, tasks and areas of the operation where they work.
7. Provide induction training to all new workers and make sure that "beginners" work in partnership with experienced workers for at least the first three months of work.
8. Treat everyone at the mine equally in terms of OSH, regardless of whether it is a woman or man, the Managing Director, permanent employee, artisanal miner or casual worker.
9. Provide valid health insurance to every employee and all subcontractors and service providers who have worked on our sites for 6 months or more.
10. Make sure that workers suffering from OSH injuries or illnesses receive adequate medical treatment and, if they cannot return to work, receive fair compensation. Every reasonable effort will be made to support participation in the Early and Safe Return to Work Program
11. Make sure any unauthorized men, women and children are prohibited from entering the immediate mining area. Children under the age of 16 years are prohibited from working in our operations.
12. Take action against any employee, contractor, subcontractor or visitor who *knowingly* violates the OSH policy or procedures.
13. Require, encourage and reward reporting of OSH concerns and "safe" thinking and practices and protect any man or woman from reprisals if they do raise concerns.
14. Prohibit drugs and alcohol on-site and working while under the influence of drugs or alcohol at any of our operations.
15. Provide each unit of the operations (each active mine site, the plant and processing areas, offices, the camp) with an appropriate and stocked first aid kit.
16. Dispose of hazardous materials; waste rock, tailings and mine water in an environmentally responsible manner and monitor this regularly.
17. Provide necessary resources to develop and implement complimentary policies related to Gender Equality, HIV/AIDS and Environmental Management.

3.1.2 Accountabilities

- *Senior Management* of the Company is accountable for providing overall OSH leadership, the necessary human and financial resources to implement the OSH Policy and related OSH systems and reviewing and responding to OSH reports, evaluations and concerns.
- *The Mine Manager* is accountable for the implementation of this Policy and related OSH systems and will make sure that sufficient resources are made available and properly used in order to achieve these stated objectives.
- *The Chief OSH Officer* is accountable for the implementation of OSH systems, investigation of accidents and incidents and promotion of safe practices in work areas.
- *All managers, supervisors, gang leader and captains* are accountable to ensure that those men and women whom they oversee work in a healthy and safe manner and are provided with the knowledge, skills and tools to make this possible.
- *Every person* is accountable to work in a manner that is healthy and safe for themselves, their workmates, persons affected by their work and the environment where they work.
- *Every person* has a responsibility to identify hazards, respond to them where possible and report them to their supervisors for appropriate action.

3.1.3 Personal Protective Equipment (PPE)

Every man and women worker is provided with and uses personal protective equipment (PPE) that is suitable for the job or task they are doing, including for those working:

- *Underground*: a hard hat, proper footwear (gumboots or other boots), suitable clothing (ideally coveralls) and a lamp or other form of sufficient lighting..
- *Open Pit:* a hard hat, proper footwear (gumboots or other boots) and suitable clothing (ideally coveralls).
- *In manual rock breaking or drilling (surface or underground):* Should additionally have eye protection (goggles, dust musk, gloves and ear plugs or muffs).
- *Near or with Machinery (e.g. gensets):* Should additionally have ear plugs or muffs and, if dust generated, a dust mask.

BOX THREE: A COMPANY POLICY ON HIV/AIDS

The company is committed to maintaining a safe and healthy work environment for all workers (employees, subcontractors, casual labourers and service providers).

- The company does not discriminate against any worker or job applicant living with or affected by HIV or AIDS and will take action to protect persons from HIV/AIDS related discrimination in the workplace.
- The Company will periodically provide Voluntary Counselling and Testing Services to workers, organize HIV/AIDS awareness programs and provide goods, services and information related to HIV/AIDS prevention.
- Participation in any HIV/AID testing services provided by the Company is voluntary. There is no obligation of any employee or worker to inform the Company of his/her HIV status. If any woman or man chooses to voluntarily inform the company of his/her status, this information will be kept confidential unless he/she chooses otherwise.
- The Company will treat HIV infection and AIDS the same as other illnesses in terms of all worker policies and benefits, including medical treatment and leaves of absence. The Company recognizes that changes in job functions and tasks will be necessary for some HIV/AIDS affected workers.
- The Company maintains an “open-door” policy. Any worker living with or affected by HIV/AIDS and those who have any related concerns are encouraged to contact the Management, to discuss their concerns and obtain information.

3.2 Roles and Responsibilities

Everybody within the mine has his or her role to play in implementing the OSH Policy and contributing towards a safe and healthy working environment in and around the mines. Other than a Chief OSH Officer, most women and men who are responsible for OSH also have other roles, functions and tasks at the mine so it is very important that everyone knows that **health and safety should be handled like any other activity** as it is a component of any job, function or task.

When defining Roles and Responsibilities, the Company should consider that:

- *Responsibility* is accountability for carrying out duties properly.
- *Authority* is the right to make decisions and direct the work of others.

Employers, supervisors, and workers are all legally responsible for health and safety in the workplace. Everyone must be individually accountable for carrying out his or her responsibilities. **The greater the authority, the greater the responsibility.** Since employers are in control, they have the most authority and responsibility for health and safety. Authority can be delegated, giving subordinates the right to act for the employer. However, the Company remains responsible for what subordinates do or fail to do.

SUCCESS OF THE HEALTH AND SAFETY PROGRAM DEPENDS ON CLEAR AND UNDERSTOOD RESPONSIBILITY, LINES OF AUTHORITY AND ACCOUNTABILITY

To carry out program responsibilities, Company Management is ultimately accountable for ensuring that everyone:

- Knows *and* truly understands what their roles and responsibilities are;
- Has the authority, resources, time, and opportunity to carry them out;
- Has the required knowledge (education, training, certification) to fulfill these responsibilities.
- Is aware of the consequences for not fulfilling their OSH roles and responsibilities.

It should be very clear that consequences may go up the lines of authority. This means that a supervisor or manager can be held accountable for individuals who fail to carry out their OSH responsibilities due to lack of knowledge, training or resources.

3.2.1 Current Organization of Work

Roles and responsibilities build on the current organization of work found in most Rwandan mines (Fig. 4). Lines of communication and reporting also follow this work structure (Section 2.8: Communication Model) where any individual who identifies as hazard or risk or witnesses an incident wherever possible takes appropriate action and reports the hazard, risk or incident to his or her immediate supervisor (gang leader, captain, site manager etc) for follow-up action.

Although all Persons have a role to play in building a culture of health and safety, **the Company should appoint a dedicated, full-time Chief OSH Officer** to oversee, implement, monitor and promote the OSH Policy and Systems who ideally reports to Senior Management at the Company Headquarters. Some small companies give main OSH responsibilities to a site manager or even the mine manager him or herself, however, there is a risk that obligations to production can take precedence over good OSH practices, putting lives at risk.

Legally, the Company also has to establish a Joint Occupational Safety and Health Committee (JOSHC). See Section 4.5.4 for guidance on how to do this.

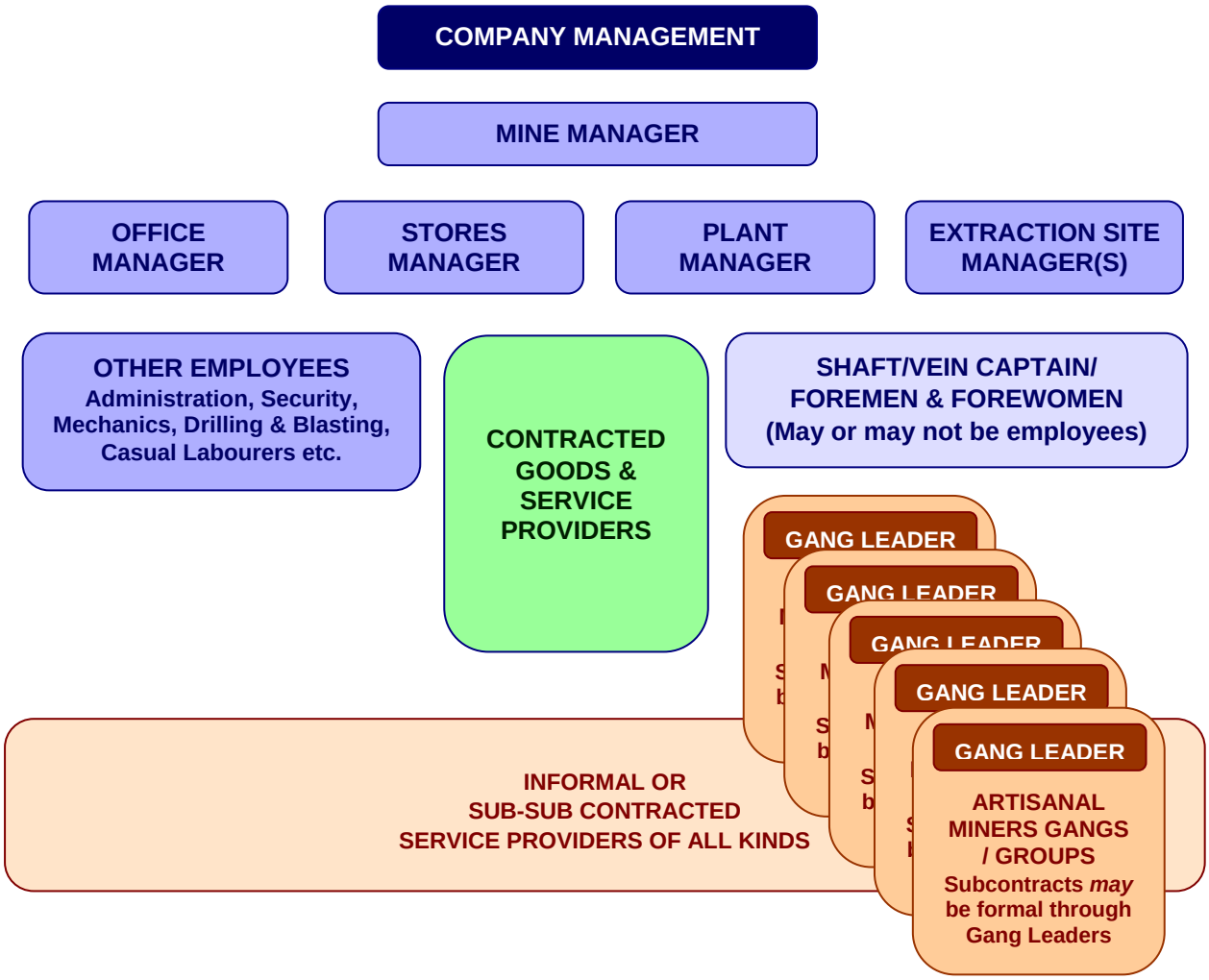


Figure Three: Common Organizational Structure of Rwandan Small Scale Mines.
Every mine is different but in all cases, the Company should formalize all work arrangements (even with artisanal miners) to support good OSH practices.

Main parties concerned with or affected by OSH issues in the mine are:

1. **Company Management** is located at the Company Headquarters or main office.
2. **The Mine Manager** (or in some cases Site Manager) who is the highest company representative that is responsible to supervision day-to-day activities in all areas.
3. **Chief OSH Officer**, or OSH Manager, who is dedicated to implementation of the OSH Policy and Systems.
4. **Site Manager or Tunnel/Vein Captain**, who supervisors specific areas where minerals are extracted underground and/or at the surface,
5. **Gang Leaders/Foremen or Forewomen,** who oversee the work of subcontracted workers in their groups.
6. **Plant Manager** who oversees mineral processing activities. In some cases, mineral processing (pre-concentration) is done at extraction sites but usually a central “plant”, “mill” or processing area is present. If mineral processing is done at extraction sites, the Site Manager should also observe these practices,
7. **Workshop Manager.** Many operations have a separate workshop where vehicles machinery and equipment are serviced and repaired.

8. **Stores Manager**, who oversees goods and materials used in the operation. Often, this includes explosives storage and, in some cases, handling.
9. **Transport Manager,** who oversees all transports and transport-related issues.
10. **Office Manager,** who is a person designated to oversee OSH in the Office.
11. **Workers employed by the company** include all permanent employees, as well as casual labourers who are undertaking work in various functions on the site,
12. **Subcontracted Miners** are artisanal miners who are (sub-) contracted and organized in gangs (2 to 60 people per group).
13. **Contractors and their employees,** who are contracted to do special jobs (e.g. civil engineering work, maintenance, etc.) at the mine and may also include contracted groups or casual labourers providing services related to grounds-keeping, road maintenance and other services.
14. **Informal Service Providers,** who are providing any kind of services to employees or miners, such as providing food, hauling goods, etc. Generally, such people should not be in the immediate mining area and means should be found to keep them out. However, informal service providers are very common in Rwandan Mines and therefore they must be included in the OSH System.
15. **Visitors** are common in mines. They may or may not have a mining background. In any case, if they move close to actual mining sites, especially in open-pit or underground mines or in plants, their safety must be ensured.

3.2.2 Statement of OSH Roles and Responsibilities

Using the OSH Roles and Responsibilities below as a starting point, the Company Joint Occupational Safety and Health Committee (JOSHC) should write a Formal Statement of OSH Roles and Responsibilities to:

1. **Assign specific responsibilities** to individual persons and put them in writing. Key persons with specific responsibilities and lines of authority should be identified. For example, name the employee(s) responsible for ordering safety equipment, managing maintenance, and supplying the resources required for work to be done safely. Name any managers, captains or any others responsible for overseeing work of subordinates.
2. Accompany assignments with a **monitoring system** to ensure compliance (Section 3). This should also become part of individual performance monitoring.
3. **State what consequences follow** when health and safety responsibilities are not carried out. It should be clear that consequences may go up lines of authority. This means that a supervisor or management can be held accountable for individuals who fail to carry out their responsibilities due to lack of knowledge, training or resources.

Every element of the OSH Program should include such a statement with copies kept on file and provided to responsible persons. These elements should provide a basis for regular performance reviews.

OSH is *not* an extra part of each job but it should be integrated into every job. In addition to a Formal Statement of OSH Roles and Responsibilities, the Company should develop and distribute job descriptions that clearly describe and assign duties related to OSH together with their other functions. Areas of authority, responsibility and lines of reporting should be included.

Examples of OSH Roles and Responsibilities are outlined below. They should be **customized to suit your organization** and integrated into the Formal Statement of OSH Roles and Responsibilities and separate Job Descriptions.

Responsibilities of Company Management (Headquarters) and Mine Owners

Company Management, including the Managing Director, should have overall responsibility for the protection of worker's safety and health, and provide leadership and direction for OSH activities in the organization. They must ensure that OSH is a line-management responsibility which is known and accepted at all levels

Responsibilities of Company Management include to:

- Provide overall leadership and accountability for development, implementation and enforcement of OSH Policy and related working management structures.
- Allocate sufficient resources (money, time, equipment, and people, including competent managers and supervisors) to implement the program, inclusive of those needed to ensure gender-responsiveness of the OSH Policy and Programs.
- Make sure that managers and supervisors are trained, supported and held accountable for fulfilling their workplace safety and health responsibilities.
- Monitor the OSH performance of Mine Managers, Chief OSH Officers and Operations.
- Ensure that effective Joint Occupational Safety and Health Committees (JOSHC) have been established at each operation and workers have the means to allow them to participate effectively in health and safety discussions.
- Cooperate with other parties, including Government, dealing with OSH issues.

Responsibilities of the Mine Manager

Sometimes called a "Site Manager", the Mine Manager is the highest company authority who is always on-site. Consequently, (s)he is the person accountable for implementation of the OSH Policy and Systems on a day-by-day basis to support a safe and healthy workplace.

The Mine Manager has responsibilities that include to:

- Support the Chief OSH Officer to develop, implement and enforce OSH and supporting policies and programs (e.g. related to HIV/AIDS, gender and environmental management) and demonstrate Company commitment to these policies through leadership.
- Ensure that a gender-responsive Joint Occupational Safety and Health Committee (JOSHC) is established and fulfills its responsibilities. Actively participate on the JOSHC.
- Adequately plan, budget, request and ensure proper use of resources (money, time, equipment, and people, including competent managers and supervisors) to implement the OSH Policy and Programs, inclusive of those needed to ensure gender-responsiveness of the OSH Policy and Programs.
- Make sure that line managers, supervisors and workers have the information, training, certification, supervision and experience to do their jobs safely and are held accountable for fulfilling their workplace OSH responsibilities.
- Monitor, evaluate and manage OSH performance of the Chief OSH Officer, line managers, supervisors and JOSHC.
- Ensure that emergency/rescue teams are organized, trained and resourced. The Mine Manager should take immediate measures in the event of a serious accident or illness.
- Ensure that legal health and safety requirements are met and cooperating with other parties, including Government, dealing with OSH issues.
- Maintain regular and open communication with the Chief OSH Officer, Line Managers, Foremen and Forewomen, Gang Leaders and others in a supervisory role.
- Communicate regularly with and report to Company Headquarters on OSH performance, hazards and risks and corrective actions needed.

Responsibilities of the Chief OSH Officer

Given the workforce size, number of satellite sites and seriousness of the OSH risks found in most Rwandan operations, the Company should appoint a Chief OSH Manager for their operations. The Chief OSH Officer should be based on-site, employed on a full-time basis and dedicated to OSH activities. The Chief OSH Officer has responsibilities that include to:

- Establish, guide, actively participate in and report to the Joint Occupational Safety and Health Committee (JOSHC).
- Develop, implement, monitor and adapt OSH Programs as well as the complimentary HIV/AIDS Policy in compliance with the Gender Policy with input from the JOSHC.
- Adequately plan and budget for and ensure proper use of resources (money, time, equipment, and people, including competent managers and supervisors) to implement the OSH Policy and Programs.
- Build genuine understanding of all men and women workers with respect to the OSH Policy and individual roles and responsibilities through implementation of the Communication Model and Workforce Training Program.
- Provide training and sensitization of all line managers, supervisors and workers and ensure they have the information, training, certification, supervision and experience to do their jobs safely, are following safe and healthy work practices and are held accountable for fulfilling their workplace OSH responsibilities.
- Organize, train and ensure sufficient resources for emergency/rescue teams and take a front-line role in emergency response in the event of a serious accident or illness.
- Ensure that, where specific technical expertise is needed, technical experts are brought in to effectively conduct training in conjunction with the Workforce Training Program.
- Do a Job Safety Analysis (JSA) for each job at the mine and write and train workers in related safe working procedures.
- Make sure personal protective equipment (PPE) and medical/first aid facilities are provided as needed and properly used.
- Conduct scheduled and ad hoc OSH Inspections according to OSH Checklists, analyze and report on findings and ensure corrective actions are taken in a timely manner.
- Lead Incident and Accident Investigations, analyze and report on findings and ensure correction actions are taken as needed.
- Encourage and welcome reports of incidents from workers and receive, collect, compile, analyze and follow up these reports on an ongoing basis.
- Ensure that legal health and safety requirements are met and cooperating with other parties, including Government, dealing with OSH issues.
- Report monthly, quarterly and annually on OSH performance and as serious incidents occur and submit reports to the Mine Manager and Company Management. Follow-up to ensure resources are availed for corrective actions on a timely manner.
- Maintain regular communication with the Company Headquarters, the Mine Manager and Site Managers, Foremen and Forewomen, Gang Leaders at the mine, especially with regard to OSH issues, and provide related advice as needed.
- Ensure open lines of communication with all formal and informal members of the workforce and make means available and known for workers, both women and men, to participate effectively and regularly in OSH training, sensitization and discussions.
- Receive and respond sensitively and confidentially to any complaints of discrimination, exploitation, harassment, exploitation or other mistreatment.
- Regularly report on OSH performance to Company Management.

Given workforces of 600-1000 people, additional dedicated Health and Safety Coordinators may be needed to assist the Chief OSH Officer. Responsibilities may include to:

- Advise line managers, supervisors and workers on OSH matters and help all workers understand and fulfill their OSH responsibilities in an ongoing basis.
- Cooperate with the Chief OSH Officer and JOSHC in support of OSH Policy objectives.
- Collect and analyze OSH information and statistics.
- Coordinate and monitor OSH training.
- Conduct research on special problems.

Responsibilities of Line Managers, Captains, Gang Leaders and Other Supervisors

Line managers (site managers, plant managers, stores managers, office managers etc) and other supervisors may be appointed on the JOSHC but in any event have specific responsibilities to OSH, particularly in the work areas and workers under their supervision. Each Supervisor has a responsibility to:

- Understand the OSH Policy, personal Roles and Responsibilities and those of women and men whom they are supervising as well as main hazards/risks in his/her work area.
- Provide leadership through safe work practices and personal behaviour that demonstrates a commitment to the OSH Policy.
- Oversee and inspect day-to-day work practices and conditions in their respective units and ensure compliance with workplace OSH requirements.
- Ensure that trained First Aiders are on-site and personal protective equipment (PPE) suitable to specific jobs, tasks and functions is provided to workers and used properly.
- Report hazards and risks and, where possible, take corrective action as risks/hazards are identified. Ensure that, where necessary, additional financial and human resources or supplies/tools are made available to take corrective actions.
- Immediately remove workers from unsafe working conditions or remove individual workers refusing to employ safe practices until corrective actions are taken.
- Provide hands-on guidance, instruction and coaching to workers under their supervision and advocate for and ensure workers are provided with sufficient training, information and resources to comply with OSH requirements.
- Ensure only authorized, competent workers operate equipment and tools.
- Oversee and conduct (or appoint a competent person to conduct) preventative maintenance and ensure proper function of equipment within his/her area of operations.
- Know how to safely handle, store, produce and dispose of chemical and biological substances at the workplace.
- Cooperate with and freely provide information to the Chief OSH Officer and JOSHC and encourage other workers to do the same.
- Understand emergency response and rescue procedures and take immediate action in the event an emergency.
- Promote OSH awareness, encourage reporting of incidents, hazards and risks and ensure that no workers, formal or informal, man or woman, are subject to abuse, discrimination, exploitation, harassment or other form of mistreatment.
- Keep lines of communication open with workers under his/her supervision and make means available and known to workers, both women and men, to participate effectively and regularly in OSH training, sensitization and discussions.

Responsibilities of Workers

All workers, whether contractors, subcontractors or informal labourers, have a responsibility to:

- Learn and understand the OSH Policy, personal roles and responsibilities, common hazards and risks, procedures or safety practices and, if unsure, ask for advice, assistance or training from the immediate supervisor and/or the Chief OSH Officer.
- Participate actively in OSH Training and sensitizations as it is provided.
- Use PPE, safety equipment and devices and machine guards suitable for the job or task he or she is performing.
- Elect representatives to the JOSHC and ensure that they openly communicate JOSHC activities with workers they represent.
- Report unsafe practices and workplace hazards/risks to his or her immediate supervisor and/or the Chief OSH Officer. Workers are also encouraged to report concerns to their elected JOSHC representative in the event that supervisors and management do not effectively respond to OSH concerns.
- Work safely and help fellow men and women workers to follow safe practices.
- Cooperate with the Chief OSH Officer, JOSHC and others on OSH issues.

Responsibilities of the Joint Occupational Safety and Health Committee (JOSHC)

The role of the JOSHC must *not* be confused with the responsibilities of managers, supervisors or employers. The JOSHC brings together workers' in-depth practical knowledge of specific jobs and managers' knowledge of the overall OSH Policy to provide input and advice on health and safety matters. The JOSHC responsibilities are to:

- Conduct the initial and periodic analysis of hazards and risks, co-identifying related corrective measures and ensure they are taken.
- Review and co-develop responses and corrective actions to Monitoring and Evaluation Reports from the Chief OSH Officer concerning incidents, accidents and injuries and overall OSH performance.
- Review the OSH System and provide input and advice on ways to improve it. Company Management ultimately remains accountable for final decisions and performance.
- Report back to and receive feedback and concerns from the workers they represent.
- Conduct an Annual Audit of the effectiveness of the OSH System.

Responsibilities of Contractors

If an outside company or self-employed person is hired to provide any goods and/or services on a contract basis (with a formal work arrangement and is not a regular employee), this company or person is a "contractor". Contracted service providers work occasionally in the mine on special jobs for a limited time. They do not have a special responsibility within the mine's OSH Policy but since they are working in the mine, they also have obligation to implement follow the OSH Policy and obey the rules and guidelines, including those related to PPE. Generally, they are under the direct responsibility and supervision of the Mine Manager.

Contractors themselves may have employees or "subcontractors" and so Contractors have *additional* responsibilities including to:

- Set up a system of shared responsibilities and determining 'who is responsible for what' in relation to the health and safety of their workers and subcontractors.
- Control any health and safety hazards over which the Contractor has complete and direct control including those that could affect the 'subcontractor' (Similarly, the subcontractor is responsible for controlling hazards within the subcontractor's direct and complete control).

- Cooperate with subcontractors to control health and safety hazards that are not within the direct and complete control of the contractor.
- Coordinate the health and safety programs of two or more subcontractors working at the place of employment
- Provide subcontractors and their occupational health committees with any relevant information that could affect their health and safety, or anyone else's health and safety.
- Make sure subcontractors understand who is responsible for health and safety activities that affect them.
- Monitor subcontractors to ensure they comply with workplace health and safety requirements and taking action to correct any non-compliance.

Responsibilities of Suppliers

Suppliers of equipment, chemicals or other special goods to the operation are responsible to:

- Supply products that are safe when used according to instructions.
- Provide instructions for the safe assembly, use and disassembly of products they supply (sell, rent, or lease).
- Make sure that products comply with legislation.

Informal providers of goods (like food, water and basic tools) are often found in mining areas. Strictly speaking, these people should *not* be in the immediate area of active working places. However, the reality shows that informal service providers are very common in Rwandan Mines and so they must be included in the Company OSH Policy and Programs and should also be sensitized accordingly.

Informal providers of goods to the operation should:

- Follow the principles of the OSH Policy.
- Stay away from actual mining activities and never go underground.
- Follow advice and directions from company supervisors and other management staff.
- Report any mistreatment, abuse or harassment to the Mine Manager, Chief OSH Officer or other Authority.
- Seek and follow advice from experienced miners and mine employees.
- Make sure the Mine or Site Manager is aware when they are in the mining area.

Responsibilities of Visitors

Visitors are common in mines. They may not be used to a mining environment or aware of its hazards and risks. A visit requires the approval of the Mine Manager and *before* entering the mining area, visitors *must* receive safety briefing. They shall always be accompanied by a supervisory official. Visitors are responsible to:

- Follow the principles of the OSH Policy.
- Never move within mining areas without a supervisory official
- Follow orders from company supervisors and other management staff.
- Seek and follow advice from experienced miners and mine employees.

The accompanying supervisory official should make sure that the Mine or Site Manager is aware visitors are in the mining area.

3.3 Summary of Key Points

The OSH Policy and Proposed Roles and Responsibilities outlined in Section One must be adapted, customized and adopted based on the needs, issues and capacities specific to your company. Important points to remember include:

- Your OSH program's success depends on clearly defined responsibilities and accountabilities.
- Handle OSH responsibilities like responsibilities in any other area of the organization.
- *Responsibility* means being accountable for carrying out a task. *Authority* is the right to direct others. Specific responsibilities reflect the needs of the workplace.
- The Company remains accountable for the overall OSH Policy and Programs. Human and financial resources needed to implement the OSH System must be integrated into work plans, budgets and schedules.
- The formal and informal workforce is large and hazards and risks serious in most Rwandan mines. A full-time, dedicated Chief OSH Officer is a good investment if real progress towards is to be achieved. Safety Coordinators may also be needed to help everyone to carry out their duties properly.
- The Chief OSH Officer, Managers and Supervisors are responsible for implementing OSH Programs. This includes ensuring women and men under their supervision have adequate training, resources, and time to carry out their responsibilities properly.
- Workers carry out their responsibilities within the program, such as following safety rules, using correct tools, personal protective equipment, and so forth.
- If you hire an outside company or self-employed person on a contract and direct their activities, then you become a 'contractor'. A system of shared and overlapping OSH responsibilities will be needed. Contractors are responsible for work they control. This includes a duty to inform others about any hazards their work could create.
- Suppliers are responsible for providing safe products, when used as directed. This includes a duty to provide instructions for the safe assembly, use, and disassembly of their products or equipment.
- Informal Supplies of Goods Providers are also a reality on mine sites. They also needed to be included in the OSH System, sensitized on basic OSH concepts and rules and procedures.

4 ESSENTIAL OCCUPATIONAL SAFETY AND HEALTH SYSTEMS

Essential OSH systems in any mining operation are described in six separate guidelines that will help your operation to:

1. ***Analyze Hazards and Risks for your Mining Operation.***
   Because every mining operation is different, companies must work with employees and workers to identify the hazards and risks that may exist for different units (the mine, the plant, the office, etc) and different jobs at the mine site. This basic guide will also build workers' skills and awareness to identify and adequately respond to hazards and risks.

2. ***Develop a Preventative Maintenance Program***.
   Proactive measures are usually much less costly (in terms of money and human health and wellbeing) than reactive responses. This guideline outlines basic requirements to help prevent equipment related accidents, injuries and illnesses before they occur while supporting ongoing functioning of equipment to reduce or eliminate work stoppages.

3. ***Implement an Incident Reporting and Investigation Program***.
   If an accident or event causes injury or illness resulting in lost work, then action must be taken to make sure the incident does not happen again. Similarly, a serious "incident" may occur (e.g. a pit wall failure) with no physical harm, but response is still warranted. This calls for a systematic way to report and examine causes of incidents in order to identify technical measures, changes to work systems or institutional controls to prevent a recurrence.

4. ***Establish an Early and Safe Return to Work Program.***
   When a lost-work occupational injury or illness occurs, the company has an obligation to ensure that a worker has sufficient time and resources to recover and does not suffer additional financial, physical and emotional hardship. Basic principles are presented.

5. ***Build an Effective Communication Model.***
   Clear and open lines of communication help make sure that OSH Policy, rules and procedures are understood, hazards and risks are identified and addressed on an ongoing basis and roles, responsibilities and accountability of all parties is clearly known and followed. This guideline describes who should communicate; specific tools and methods; how to set-up a Joint Occupational Safety and Health Committee (JOSHC) and Grievance Mechanism to support open and effective communication.

6. ***Establish a Workforce Training Program.***
   Giving information or talking in front of a group of workers is not the same as building knowledge, developing skills or improving OSH attitudes. This guideline is central to developing a culture of safety and health in any operation and outlines critical components of training. Sample Training Sessions are outlined for four critical training topics:
   (i) Prevent, Control and Protect from Common Hazards and Risks
   (ii) Reporting an Incident, Accident, Injury or Illness
   (iii) Response Procedures for an Emergency, Serious Accident or Injury
   (iv) Basic First Aid Training

While each mining operation must customize their OSH systems for their own operations, each guideline includes proposals for: (a) when these activities should be undertaken; (b) who should do them (Responsible Persons); (c) key requirements of the activity; and (d) training needs of Responsible Persons.

Guidelines for conducting Workplace Inspections and Accountability Measures are outlined in Section 5: Supporting Continuous Improvements through Monitoring and Evaluation.

4.1 Hazard and Risk Analysis

Identifying and controlling hazards and risks is the foundation of a good OSH system. A *hazard* is any activity, situation or substance (like a chemical or smoke) that can harm or hurt someone. A *risk* describes the chance or likelihood that a hazard will cause harm and how serious the damage, injury or illness could be if happens.

For example, a section of an underground mine may have very poor ventilation (creating a *hazard*) but if workers are kept from working in the area *or* blowers and fans are used to force air into the area, the *risk* of harm (in this case, suffocation and death) is reduced. If the area were sealed off completely (although not always practical), the risk can be eliminated.

Different areas of the mining operation and different tasks in those areas present different hazards and risks. Hazards and risks can also change over time and must be periodically assessed. For example, ground conditions may worsen or improve as development advances deeper underground, equipment like fans and blowers can breakdown stopping airflow to some tunnels underground, women and men with different skills levels may join the workforce, and new methods, tools and equipment can bring a different set of hazards and risks.

MANY WORKPLACE ACCIDENTS, ILLNESSES AND INJURIES ARE THE RESULT OF HAZARDS AND RISKS THAT PEOPLE HAVE COME TO ACCEPT OR CONSIDER AS NORMAL OR UNIMPORTANT!

The main objectives of a Hazard and Risk Analysis are to:

- ***Identify main hazards and risks*** in different areas of the operation and associated with different jobs, functions and tasks.
- ***Prioritize*** hazards, the likelihood of a related accident, injury or illness occurring and the potential seriousness if it were to cause harm.
- ***Identify suitable corrective actions*** to *eliminate* the risk, or if it cannot be eliminated, ways to *prevent* it from occurring, *control* or *minimize* its effects.

Often, it's not possible to identify every hazard and prevent every accident, illness or injury, but basic precautions can still be taken. Hazard/risk identification and prevention can become part of regular operations and job descriptions by:

- Managers and supervisors are required to consistently monitoring the workplace for known and potential hazards and assess the risks of those hazards hurting workers.
- Workers, supervisors and managers are trained, encouraged and required to report hazards and risks.
- Putting in place effective controls (e.g. underground supports, fans, machine guards).
- Hold those in authority in a given area (Mine Manager, Line Manager, Supervisor) accountable to taking corrective action.

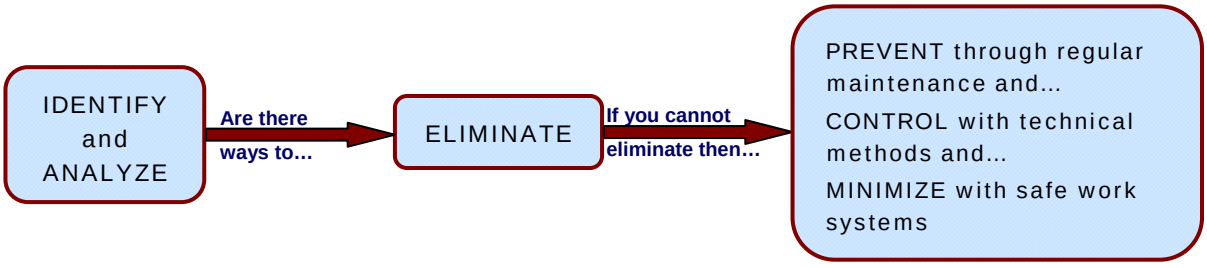


Figure Four: Identify Hazards and Risks in Your Operation and Measures to Eliminate, Prevent, Control and Minimize Them

4.1.1 Main Types of Hazards in Small Mines

Hazards are divided into two main categories: **(i) Health Hazards**, that can cause an occupational illness, and **(ii) Safety Hazards**, that can cause an occupational injury (like cuts, wounds, broken arms or legs). A health hazard may produce serious and immediate (*acute*) affects or it may cause long-term (*chronic*) problems. All or any part of the body may be affected. Someone with an occupational illness may not recognise the symptoms immediately. For example, noise-induced hearing loss is often difficult for victims to detect until it is advanced.

Table Two: Main Types and Examples of Health and Safety Hazards in Small Mines

COMMON HEALTH HAZARDS		COMMON SAFETY HAZARDS	
Types of Health Hazards	**Examples of possible risks if exposed to the hazard:**	**Types of Safety Hazards**	**Examples of possible risks if exposed to the hazard::**
1. Chemical Hazards *A few examples include:* ▪ Battery acid, solvents. ▪ Diesel fuel, petrol, oil. ▪ Chemicals used in processing minerals. ▪ Exhaust from equipment.	*Exposure to the hazard might create a risk of:* ▪ Respiratory problems (if inhaled). ▪ Skin rashes and diseases (if handled). ▪ Poisoning and death (if swallowed or inhaled)	**1. Chemical Hazards** *A few examples include:* ▪ Battery acid, solvents. ▪ Diesel fuel, petrol, oil. ▪ Chemicals used in processing minerals. ▪ Harmful fumes and gases.	*Exposure to the hazard might create a risk of:* ▪ Chemical burns on skin. ▪ Loss of sight. ▪ Burns to lining of the lungs. ▪ Suffocation and death
2. Biological Hazards *A few examples include:* ▪ Bacteria, viruses and pathogens (sewage). ▪ Dust and moulds. ▪ Parasites and burrowing insects.	*Exposure to the hazard might create a risk of:* ▪ Diarrheal diseases like cholera and typhoid. ▪ Allergies, asthma or lung diseases like silicosis. ▪ Skin rashes (e.g. if immersed in water).	**2. Biological Hazards** *A few examples include:* ▪ Poisonous snakes and spiders. ▪ Wildlife.	*Exposure to the hazard might create a risk of:* ▪ Poisoning (if bitten). ▪ Wounds (if attacked). ▪ Poisoning (if swallowed or inhaled)
3. Physical Hazards *A few examples include:* ▪ Heat and sun. ▪ Vibration. ▪ Noise. ▪ Radiation.	*Exposure to the hazard might create a risk of:* ▪ Heat stress or stroke ▪ Vibration white finger. ▪ Hearing loss.	**3. Physical Hazards** *A few examples include:* ▪ Flooding. ▪ Rock falls or slides. ▪ Flying rock fragments. ▪ Unsafe use of explosives	*Exposure to the hazard might create a risk of:* ▪ Drowning and death. ▪ Broken neck, arms, legs. ▪ Cuts and wounds. ▪ Death
4. Work Design Hazards *A few examples include:* ▪ Repeated motion. ▪ Heavy loads. ▪ Strange body positions.	*Exposure to the hazard might create a risk of:* ▪ Chronic neck/back pain ▪ Muscle hardening. ▪ Numbness in fingers or hands.	**4. Mechanical/Electrical Hazards** *A few examples include:* ▪ Machines with moving parts ▪ Electric currents.	*Exposure to the hazard might create a risk of:* ▪ Loss of a finger or hand.. ▪ Electrocution (e.g. from broken equipment). ▪ Loss of an eye
5. Stress Hazards *A few examples include:* ▪ Sexual, physical or verbal harassment. ▪ Exploitation. ▪ Shift work.	*Exposure to the hazard might create a risk of:* ▪ Depression, low self-esteem, exhaustion. ▪ Malnutrition. ▪ Stress related diseases.	**5. Stress Hazards** *A few examples include:* ▪ Alcohol or drugs. ▪ Harassment. ▪ Long Shifts.	*Exposure to the hazard might create a risk of:* ▪ Injuries from violence. ▪ Rape ▪ Injuries from tripping and falling (e.g. if exhausted)

From the examples of possible harm caused by exposure to different hazards, it is obvious that the *way* that a person can come into contact with a hazard is important (exposure pathway). Inhalation? Swallowing? Handling? Working in remote underground areas? Or with equipment that has moving parts? **Understanding the different hazards and risks that come from different jobs are very important in preventing accidents, injuries and illnesses!** Doing a "Job Safety Analysis" will also help build this understanding and the corrective actions needed!

4.1.2 When to Do A Hazard and Risk Analysis

In reality, hazards and risks are consciously and unconsciously assessed on a daily basis as managers, technicians, administrators, cleaners and other workers go about their daily business. To *systematically* make sure this information is collected, a variety of methods have been included in "How to Do a Hazard and Risk Analysis" (below). The actual *analysis* of this information should be done by the JOSH Committee including the Mine Manager and Chief OSH Officer but other knowledgeable supervisors, in consultation with experienced workers, should be trained and encouraged to lead hazard identification and assessment *and* put in place corrective actions as they perform their regular day-to-day functions.

Regular analysis of hazards and risks helps you to:

- Identify ways to eliminate, prevent, control and minimize hazards and risks to create a safe and healthy work environment.
- Customize OSH Systems for your operation and adapt the OSH Policy and Programs as circumstances change and more is learned about hazards and risks and how to control them in the operation.
- Increase knowledge and skills of your workforce to identify and respond to hazards and risks around the mine site.
- Engage your workforce in decisions that affect them. This empowerment and ownership will help create a culture of safety throughout the workforce.

Table Three: Schedule of Analysis of Hazards and Risks

PURPOSE	DURATION	BY WHO	SOURCES OF INFORMATION
Initial Analysis	One day meeting	JOSHC, Chief OSH Officer and Mine Manager	Five days of data collection by each OSH member (*see method below*).
Identify, Analyze, Report and Respond in conjunction with regular job functions.	Ongoing: together with regular job functions	Line Managers, Supervisors, Chief OSH Officer and Mine Manager	Supervisors, all workers.
Monthly Review of OSH Performance	Half day meeting	JOSHC, Chief OSH Officer and Mine Manager	Inspection Report Summaries. Incident Report Summaries. Input from line managers, workers.
Following a Serious Incident or Accident causing a Lost Work Injury, Illness or Fatality	Depends on severity.	JOSHC, Chief OSH Officer and Mine Manager	Accident Investigation Report. Input from supervisors on-site.
Annual Detailed OSH Review	One day meeting	JOSHC, Chief OSH Officer and Mine Manager	Inspection Report Summaries. Records of accidents, illnesses and injuries. Input from line managers, workers.

The Chief OSH Officer should be responsible for finalizing the analysis, distributing the results and sensitizing the workforce on the findings. Based on this analysis, he or she should also adapt other OSH Systems for the mining operation. Before all systems are finalized, they should be distributed and discussed with the overall Mine Manager, OSH Committee, Area Managers, Captains and any others in a supervisory role to make sure they are appropriate.

Once measures to eliminate, control, prevent and/or minimize a hazard or risk have been identified, **specific persons in authority must be identified to take corrective action within a specific time frame** and held accountable for doing so!

4.1.3 Before You Begin

Members of the Joint OSH Committee (JOSHC) should include at least one Responsible Person from each of the main areas of the operation. Depending on your site, this may include: supervisors from each mining and processing area; plant manager; stores manager; office manager and workshop manager (e.g. head mechanic); representatives of workers; member of the local authority. Advice on how to set up your JOSHC can be found in Section 4.5.4.

Every person responsible for contributing to the hazard and risk analysis should:

- Review the "How To" section below and be prepared to collect information from different sources.
- Always wear appropriate personal protective equipment suitable to the work area.
- Talk to co-workers, be prepared to explain why it's important to identify hazards and risks and ask their advice and opinions on what they think is significant.
- Carry a notebook and list hazards and risks as they are identified. This may during their day-to-day duties and when they are specifically conducting data collection.
- Ask for advice when unsure about the hazards and risks in a certain area.
- Tell the proper people if a serious hazard or risks is identified so that they can be corrected as soon as possible.

Training Needs of Responsible Persons:

All persons engaged in hazard and risk analysis should first receive training in:

- How to identify and analyze hazards and risks and common ones found at the mine.
- Potential actions to take in order to eliminate or control and minimize the risks.
- How often Hazard and Risk Analysis should be done.
- How to report hazards and risks ensure appropriate actions are taken.

A sample Training Guide is presented in Section 4.6.3.

BOX FOUR: HOW TO DO A JOB SAFETY ANALYSIS

A job safety analysis (JSA) involves:

- Breaking down each job into its steps
- Analysing the hazards present at each step
- Identifying and developing controls for those hazards
- Writing safe work procedures based on each analysis
- Testing, revising, and implementing the written work procedures
- Regularly reviewing each job procedure and keeping it current

Product literature, industry publications, legislation, and health and safety publications are useful starting points for developing JSAs. A job safety analysis usually starts with observing an expert or safety conscious worker doing the selected job and picking key points of how to do it.

Ask for volunteers. Explain to each volunteer why the JSA is being done and how it will be done. Make it clear that the job and not the worker, is being studied. Some workplaces use group discussions to perform JSAs on new procedures and infrequently performed jobs.

Some work procedures consist of several complex tasks so several JSAs may be needed.

4.1.4 How to do a Hazard and Risk Analysis

Each member of the OSH Committee should **first review these guidelines** and spend five days completing the initial assessment to identify hazards/risks as well as possible ways to prevent them or (if this is not possible) control the risks and protect women and men workers.

1. To identify hazards and risks, each JOSHC member should:

- ***Review documents, such as:*** reports and records of injuries, accidents and dangerous occurrences at the site, material safety data sheets (MSDS), maintenance reports, product literature (user's guides), legislation, industry best practices, relevant safety standards, etc. If these records don't exist, see Section 4.3 to set-up an Incident Investigation and Reporting Program.
- ***Use a job safety analysis*** (JSA) for mine workers engaged in each of the different tasks. In each task, what hazards and risks can they be exposed to? (see below)
- ***Talk to workers in each of the different* tasks** about what they think the hazards and risks are in their job. What are they worried about? In their day-to-day tasks, do they take some caution in certain activities already? You can give examples like taking care when walking down slippery inclines or safe handling a jackhammer.
- ***Conduct mock exercises or "simulations".*** In a group, different "units" (like mill workers, a drilling-and-blasting team) can act out their day-to-day tasks and identify hazards and risks together.
- ***Make a list of hazards and risks*** for different tasks, jobs and units at the mine as you do your assessment. Table 4 is an example of what this might look like.

2. To analyze hazards and risks, JOSHC members should work together.

Probably, OSH Committee members from different areas of the mine have identified the same *and* different risks than you. The OSH Committee should meet together to **analyze identified hazards and risks** for different jobs and units by making a table like the one shown in Table 4.

The very first meeting will likely require at least one full day of work to do a proper analysis. To share lessons and get new practical ideas, you should try to include mine captains or representatives of subcontractors from each site in this meeting. To complete the table, for each hazard or risk, ask these questions:

- Ask questions like these to assess the "*likelihood*" it would occur: What is the chance that the harm will occur from the risk? How often is this likely to happen? How well are any controls likely to work?
- Ask questions like these to assess the "*severity*" of the risk: How serious could the harm be if an accident, injury or illness happened? How many workers could be hurt? How often are workers exposed to the hazard? How fast could danger arise?
- From these questions, together decide if the risk would be *catastrophic* (death or permanent injury), *major / critical* (serious injury), *moderate* (injury), *minor* (minor injury) or not *significant* (no injury likely).

During this meeting, you might also learn about new hazards and risks that you haven't thought of before. Make sure to analyze these ones too. It's useful to look at how different jobs or tasks have different risks – this is called a "*Job Safety Analysis*" (Box 4). For example, the risk of a tunnel collapse may be low for drilling-and-blasting teams, but the affect (risks of serious injury or death) can be very high if it happens.

This activity helps you **identify high priority risks**. High priority risks (like the risk of a tunnel collapse in highly fractured rock near to a blast area or of suffocation from poor ventilation in remote tunnels) will need more (and faster) attention to actions to prevent, control and minimize risks.

Table Four: Analyzing and Prioritizing Risks for Your Operation

HAZARD/RISK: _____					
HOW LIKELY IS TO OCCUR?	**HOW SERIOUS WOULD THE CONSEQUENCES BE?**				
	Not Significant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	L	M	E	E	E
Likely	L	M	H	E	E
Moderate	L	M	H	E	E
Unlikely	L	L	M	H	E
Rare	L	L	M	H	H
Prioritizing Risks:	E = Extreme Risk. Immediate Action Needed H = High Risk. Senior Management attention needed M = Moderate Risk. Management responsibility should be specified. L = Low Risk. Manage by routine procedures.				

3. To develop measures and ways to deal with hazards and risks:

Once you have prioritized all of your risks and hazards, **identify appropriate actions** to eliminate or prevent, control and minimize them and protect workers. This is based on:

- ***Eliminate.*** This usually involves using a different method completely. For example, removing a weathered laterite layer with an excavator to enable surface mining can eliminate the risk of collapse of tunnels in these areas. Although this is the most ideal option, not all hazards and risks can be eliminated and alternatives bring with them different (although ideally less serious) hazards and risks.
- ***Control.*** If a risk cannot be eliminated, engineering controls and technical actions should be taken. Examples include putting sound control casings around mills, timbering in permanent adits and areas where rock is not competent and spraying water to keep dust down when jackhammers are used.
- ***Minimize*** through safe work procedures and institutional controls. Examples include rotating jackhammer operators after a minimum period of time or once numbness or pain is reported by the operator, instituting preventative maintenance programs for equipment, formalizing rules about children on-site and holding induction training for new workers.
- ***Protect.*** Different tasks and jobs require different Personal Protective Equipment (PPE). For instance, unless an accountant is entering the mine, he or she won't need gumboots, gloves, overalls, a hard hat, safety glasses, a dust mask and ear plugs, but a jackhammer operator will. Some training and maintenance in use of PPE will be necessary.

For small-scale mining operations, decisions on how best to eliminate, control and minimize risks are often based on economics, capacity and commitment. Basic steps to help you identify ways to deal with your risks are shown in Box 5.

Probably one of the biggest challenges Rwandan mines face is knowing *what* the main risks are and *how* to deal with them! **Excellent and very basic training material and guides are available** and the Company and Chief OSH Officer should begin by accessing, printing and reviewing these manuals, handbooks and guidebooks. A list of essential resources is shown in Annex One.

BOX FIVE: WAYS TO ELIMINATE, PREVENT, CONTROL & MINIMIZE RISKS

Many different actions can often be taken to deal with risks at your site and *often you need a combination of different measures* to truly reduce risks and prevent hazards! Follow these steps:

STEP ONE: **Find the main causes** of the hazard including their root cause! The "5 Why's" Method in Section 2.3.3 will show you how to do this. Usually these are a combination of:

(a) Technical Factors: Like malfunctioning equipment, wrong type or size of tools for a job, geologic conditions (e.g. weak rock), lack of ventilation shafts or heavy rainfalls causing floods.

(b) Human Factors: Like poor safety attitudes, careless practices (e.g. when handling explosives), lack of training, poor knowledge and skills, lack of supervision or hands-on guidance and abusive, incompetent, greedy or uncaring managers.

(c) Working Environment Factors: Like untidy or unclean work areas, poor sanitation (e.g. no waste dumps or handwashing stations) and disorganized workforce (e.g. a person can work any place and nobody knows where they are, what they are doing or how they are doing it).

STEP TWO: Decide if it's possible to eliminate the risk by **controlling the hazard at the source** (where the problem is created). Usually, this is by taking engineering or technical actions through:

(a) Elimination: Getting rid of a hazardous job, tool, process, machine, or substance may be the best way of protecting workers. For example, the Company might decide to stop mining in a certain area due to repeated flooding or poor rock strength hazards.

(b) Substitution: If elimination is not practical, try replacing the hazard source with something less dangerous. For example, winches and hoists could be used to carry ore instead of manual hauling. Or only competent, trained people could be authorized to prepare explosives instead of anyone who is around on the site. Be sure to also identify, assess, and control the hazards of substitutes.

(c) Re-Design: Sometimes engineering can be used to redesign the layout of the workplace, workstations, work processes, and jobs to prevent ergonomic hazards. For example, containers can be redesigned to make them easier to hold and lift. Engineering workplace lighting or ventilation could be improved or shaft entrances could be collared to prevent water inflow and instability.

(d) Isolation: Containing or enclosing the hazard is often used to control some types of hazards. For example, a genset can be kept in a ventilated house to reduce noise and gas fumes or a sound-casing can be put around a mill to reduce noise.

STEP THREE: If this isn't possible, try to **put in measures between the source and the worker**. The closer to the source, the better! Examples might include:

(a) Barriers: Block hazards by doing things like putting in guards around conveyors to protect workers from contacting moving parts or putting up screens to keep welding flash from reaching workers. Machinery lockout systems can protect workers from things like electricity, heat and pressure.

(b) Absorption: Baffles can block or absorb noise. For example, local exhaust ventilation can remove toxic gases, dusts, and fumes where they are produced.

(c) Dilution: Some hazards can be diluted. For example, clean air can be forced into tunnels to dilute gas or fumes, water can be sprayed during drilling to reduce dust exposure and silty water from mills can be diluted with run-off water in a sedimentation pond before it goes into a river.

STEP FOUR: Take action to **control hazards at the level of the worker**. Never rely on this alone! This does not remove the hazard but reduces the risk. These include things like:

(a) Personal Protective Equipment (PPE): Make sure all workers have and properly use PPE suited for their jobs and tasks.

(b) Safe Work Procedures: Do a JSA, develop safe work procedures and train people to use them.

(c) Training and Communication Programs: See Sections 2.8 and 2.9 to help you develop a culture of safety by setting up a Communication Model and Workforce Training Program.

STEP FIVE: Always always make sure **administrative controls are in place**. These include:

(a) Policies and Programs: Introduce Policies for OSH, Gender and HIV/AIDS and related Programs like those outlined in this report.

(b) Organize, Register and Formalize Artisanal Miners: Setting up a registration system and using other training and communication systems will be critical to progress towards OSH.

(c) Hold People Accountable including those in positions of Authority (e.g. Managers, Supervisors)

4.2 Preventative Maintenance Program

Preventative maintenance (PM) is a schedule of planned maintenance actions aimed at the prevention of breakdowns and failures. The primary goal of preventive maintenance is to prevent the failure of equipment before it actually occurs. It is designed to preserve and enhance equipment reliability by replacing worn components *before* they actually fail.

Preventative maintenance activities include equipment checks, partial or complete overhauls at specified periods, oil changes, lubrication and so on. In addition, workers can record equipment deterioration so they know to replace or repair worn parts before they cause system failure. Recent technological advances in tools for inspection and diagnosis have enabled even more accurate and effective equipment maintenance. The ideal preventative maintenance program would prevent all equipment failure before it occurs.

4.2.1 Economic Value of Preventative Maintenance

There are multiple misconceptions about preventive maintenance. One such misconception is that PM is unduly costly. This logic dictates that it would cost more for regularly scheduled downtime and maintenance than it would normally cost to operate equipment until repair is absolutely necessary. This may be true for *some* components; however, one should compare not only the costs but the long-term benefits and savings associated with preventive maintenance.

Without preventive maintenance, for example, costs for lost production time from unscheduled equipment breakdown will be incurred. Also, preventative maintenance will result in savings due to an increase of effective system service life. Long-term benefits of preventive maintenance include:

- Improved system reliability.
- Decreased cost of replacement.
- Decreased system downtime.
- Better spares inventory management.

Long-term effects and cost comparisons usually favour preventative maintenance over performing maintenance actions only when the system fails. A Preventative Maintenance Programme goes hand-in-hand with a **Preventative Replacement Strategy.** The idea is to replace equipment before it fails and before the costs of preventive and corrective maintenance become to high.

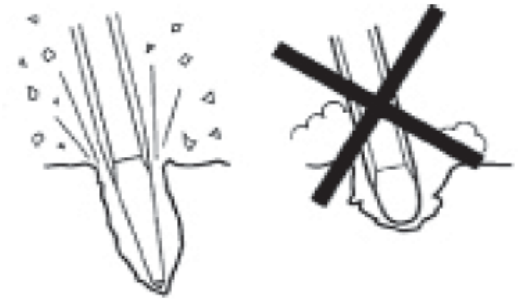
4.2.2 When Does Preventative Maintenance Make Sense?

From an *economic point of view*, preventive maintenance is a logical choice if the following two conditions are met:

- **The component, part or machine in question is more likely to fail as it is used over time.** In other words, the failure rate of the component increases more quickly with time (it wears out faster the older it gets). Preventive maintenance of a component that wears out at a *constant* failure rate does not make sense!
- **The overall cost of the preventative maintenance action must be less than the overall cost of a corrective action.** When you think of “overall costs” for a corrective action, include things like downtime costs (as a machine is being replaced), loss of production costs (when its not working), lawsuits over the failure of a safety-critical item, loss of goodwill, etc.

If both of these conditions are met, then preventive maintenance makes economic sense and there are several formulas, philosophies, programmes and approaches available to optimise the cost versus economic benefits.

However, preventive maintenance also has **important OSH implications**. When a piece of equipment or tool stops working or is working improperly, potential hazards and risks to workers can result! And sub-optimal running and worn-out machinery can increase the likelihood for occupational illnesses (Fig. 5).



WORN DRILL BITS CAN:

- Increase vibration and drilling time increasing the risk of "vibration white finger".
- Increase dust and the risk of silicosis or other respiratory diseases.
- Jump and kick-back causing injury.
- Overwork and damage the jackhammer (potentially stopping or reducing production)

Figure Five: An Example of How Preventative Maintenance can Reduce OSH Risks and Profitability

4.2.3 How to Establish a Preventative Maintenance Program

To set up an effective preventative maintenance program, you can:

1. Develop Preventative Maintenance Schedules and Checklists

Take stock and develop preventative maintenance schedules and checklists for every major piece of equipment or machinery and for *groups* of minor tools (e.g. hammers, pickaxes). New equipment usually comes with a handbook, which includes guidelines for preventative maintenance. Websites for equipment providers (e.g. Caterpillar, Komatsu etc) have excellent resources to help you do this for both new and used equipment!

Table Five: Example of a Preventative Maintenance Schedule for a Generator

	Check:	Service				Indicators for potential problems
	Operator	Workshop		Supplier		
		every 250 hours		every 1000 hours		
GENERATOR	Daily before starting:	Check	Replace	Check	Replace	
Oil	X	X		X		Oil leaking
Heater plugs		X				Engine is hard to start when it is cold.
Fan Belt	X		X		X	Fan belt needs frequent tightening
Timing belt		X			X	
Etc. (list parts)						
Etc.						
Etc.						

2. Make Sure You Have the Means to Implement the Plan

When developing a preventative maintenance plan (and if you are thinking about purchasing any equipment), make sure there is enough capacity and sufficient means available to implement it.

Necessary means are:

- Well equipped workshop
- Technical staff
- Training for Technical staff
- A store with consumables & spares
- A cash-flow, healthy enough to purchase and stock spares as well as to pay for scheduled major services by the supplier and to afford emergency repairs and replacements if needed.
- Capacity for basic but sufficient training for operators and miners.
- Spare units of equipment and tools

3. Develop the Capacity, Skills and Knowledge Needed to Implement the Plan

There are several levels of training needed to run a preventative maintenance programme.

- Training for operators to operate the equipment appropriately, to do daily checks and maintenance and to read and understand indicators for potential problems in time.
- General and equipment specific training for the technical staff in the workshop to do necessary repairs and maintenance appropriately.
- Training for the stores manager to ensure good management of the stores for constant availability and supply of consumables and spares.
- Training for the miners and workers to handle, store and maintain their tools and equipment appropriately.
- Sensitisation workshops for all to understand the idea and importance of the preventative maintenance concept and everybody's role in it.

In some cases, a Technical Expert may be needed to conduct suitable training and provide hands-on guidance and coaching. For more details, see Section 4.6: Workforce Training Program.

4.3 Incident Investigation Program

Incident investigation is about getting the facts about an accident, injury, sudden illness or near-miss event and then analyzing these facts to **identify all of the factors that may have contributed to or caused the incident.** This helps the Company and its workers to identify actions that can be taken to prevent the incident/event (or an even more serious accident) from happening again.

4.3.1 Before You Begin

Although an incident investigation should be the responsibility of supervisors (site managers, captains or others designated by the company), *all* workers in your operation should first understand what is a:

Accident: An unexpected and unplanned event, which causes death, personal injury, deleterious health effects or damage to property.

Lost Time Injury: When a worker has more than one shift off duty because of a doctor's orders (excluding travel time to a hospital or clinic).

Serious Accident: That which results in a lost time injury or if property damage exceeds a value specified by the company.

Minor (First Aid Only) Accident: This is an accident that causes only a minor injury. Only basic first aid (like plasters, bandages and antibiotic ointment) may be needed although a worker may visit a doctor to get checked out.

Near Miss Incident: When an unexpected and unplanned event happens that has *potential* to but *does not* cause injury, ill health, death or damage to property. An example is a pit wall collapse that happens when no one is working in the area.

Occupational Illness. This is an illness or disease of a worker which may have resulted from work at a mine. This can include something like vibration white finger cause by frequent use of a jackhammer, respiratory problems from chronic exposure to smoke or a cholera outbreak cause by poor sanitation and hygiene at the mine.

BOX SIX: ENCOURAGE AND PRAISE WORKERS FOR REPORTING INCIDENTS

All workers play an essential role in reporting incidents! People make mistakes all of the time so it's important to communicate to all workers that **Incident Investigation does not intend to lay blame.**

All workers should know that there are only three reasons to discipline a worker for an OSH incident or incidents. They are:

1. **Willful Negligence:** This is failure to act when a reasonable person *who knows and understands that a risk exists* would take action. Negligence to act is not willful if a person sees something that might create a safety or health risk but *doesn't know or understand* that it is a risk. Their lack of action is because of lack of knowledge and they need training *rather than* discipline.
2. **Criminal Intent:** This is when actions are done *on purpose* or intentionally in order to cause harm to people or property.
3. **Use of Drugs or Alcohol:** Working while under the influence of illegal drugs and alcohol can create an extremely unsafe environment for all workers and is prohibited under the Company OSH Policy.

Any worker is more likely to report an incident if they know they will not be punished and they should actually be commended and praised for reporting! Making all workers aware of this will help create a healthy reporting culture in your operation.

LOOK INTO EVERY INCIDENT TO LEARN FROM THEM AND TAKE PREVENTATIVE ACTION. OFTEN, IT IS MANY SMALL HAZARDS AND RISKS THAT *TOGETHER* RESULT IN A SERIOUS ACCIDENT.

4.3.2 When to do an Incident Investigation

Incident Investigation Forms of all incidents should *always* be completed and submitted to the Chief OSH Officer – *even* for minor accidents needing only first aid and "near misses" that don't harm anyone (but could have)! Many workers may think it's not important to report minor incidents and near misses but think about these examples:

- What if minor injuries from machines and tools are happening in the mill time and again, even though protective gear is used and engineering measures are in place (e.g. guards for conveyors)? If these "controls" are in place and working properly, then the company may need to increase their efforts to train and sensitize workers on safe practices.
- What if a large number of rock falls were reported in a certain area of underground tunnels? Because a tunnel collapse can cause serious harm and even loss of life, urgent action should be taken (like closing off the area until adequate supports are put in place).
- Imagine if many workers who pound rock with a mortar-and-pestle were reporting severe headaches, coughing and chest pain? Although other factors should be examined, this might be due to daily inhalation of dust (that over time can cause serious lung diseases like silicosis or pneumoconiosis).

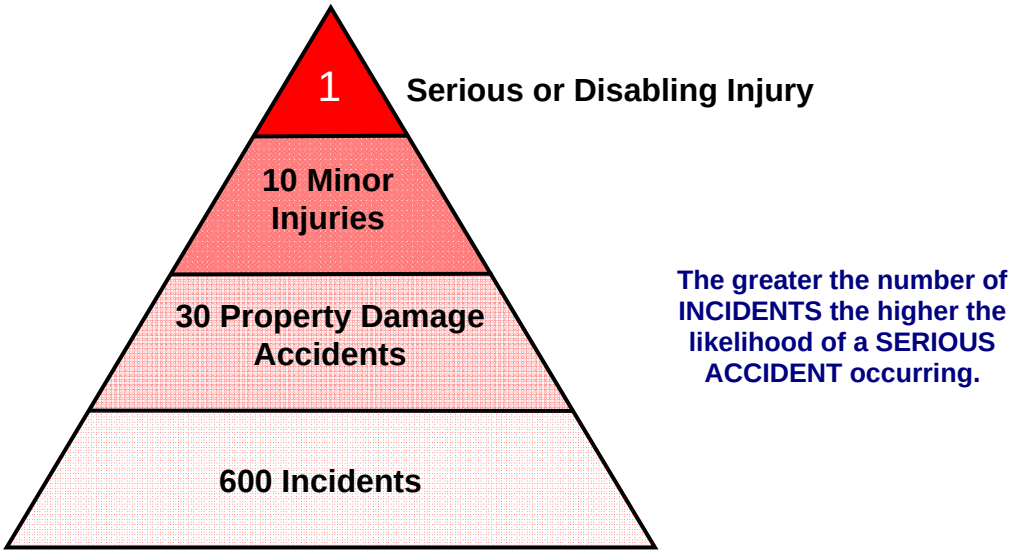


Figure Six: Reporting all incidents helps you measure safety performance, identify problem areas and prevent injuries and illness
(Source: F. Bird).

Reporting *all* incidents helps identify any problem areas and where action is needed**. If you can reduce the overall number of incidents, then you reduce the number of accidents** (Fig. 7). Over time, even the *habit* of regularly reporting and investigating incidents will increase OSH awareness of the workforce.

4.3.3 How to do an Incident Investigation

All workers are responsible to report any OSH incident immediately to their supervisor. No worker should fear reporting even a small incident and any worker's attention to OSH must be encouraged and praised (Box 6).

Once a supervisor or other designated person is told of (or saw themselves) an incident, accident, illness or injury, they should:

Step 1: ***Follow Safe Emergency Response Procedures if any person is suddenly ill, injured or the area may be unsafe.*** Step-by-step responses are described in Section 4.6.4. These include making the area safe, starting rescue and first-aid efforts and informing the Mine or Site Manager and/or Chief OSH Officer.

Minor incidents typically don't need to be reported immediately. Types of incidents that require *immediate* action and reporting to the Mine or Site Manager and/or Chief OSH Officer (and when these people should immediately notify authorities) include:

- The death of *any* individual in the mining license are as a result of mining operation activities in the area (e.g. fly rock, pit wall collapse, drowning in flooded pits or underground workings etc).
- Injury or illness that may result in death or is likely to result in hospitalization.
- Entrapment of any person requiring rescue efforts.
- Mine fires that result in evacuation of miners or cause major damage to structures (e.g. buildings) or equipment at the mine.
- All explosions (e.g. unplanned detonation of explosives).
- Rock outbursts, rock falls, tunnel or pit wall collapses that result in an injury *or* stop production for more than 30 minutes.
- Flooding that causes retreat or evacuation of workers.
- An unstable condition at a waste rock pile, tailings impoundment, pit wall or in a tunnel that requires emergency corrective action to prevent failure and requires evacuation of any persons.
- Any accident, injury, sudden illness or incident that is likely to be the subject of immediate and/or extraordinary media interest.

Although the Supervisor should start the Incident Investigation, in these serious cases an "Investigation Team" will *also* be needed (see below). **Be aware that providing immediate rescue and first aid efforts may require that one or more workers be sent to report the incident** (especially if mobile phone or radio communication isn't possible). This is because the supervisor must protect any workers at risk and make sure that rescue/first aid efforts are taking place.

Step 2: ***Secure the Area.*** Make sure workers are kept back from the scene of the incident or accident for safety purposes and to preserve any evidence or signs of what happened.

Step 3: ***Start to Collect Information.*** Try to figure out *what* happened and *why* it happened using methods like:

- Taking photos of the scene and examining them for clues.
- Interviewing people who saw what happened (witnesses), if there are any. Do this as soon as possible as memories of the event can change. If it was a serious accident, witnesses may be in shock and upset. Be calm and supportive.
- Find out what Personal Protective Equipment (PPE) was being used and other control or preventative measures that were in place (e.g. guards on conveyors, timber supports or methods like benching in open pits).
- "Mapping" or making a simple drawing of the incident scene, including where victims were located.
- For serious incidents, collect and number physical evidence, where possible, such as equipment or tools, registry books.

Step 4: ***Analyze Your Information.*** There are usually many factors that contribute to an occupational injury, illness or incident. A lot of them are technical while others will relate directly to Company OSH Systems. A simple tool to find out the root causes is called "The 5 Why's". As in the example below, why asking "why" many times can help quickly identify technical and organizational problem areas that need corrective action.

Table Six: Identifying the Root Causes of an Incident
An Example of One Branch of a 5-Why Tree for a Tunnel Roof Collapse

<table>
<tr><th>WHAT HAPPENED</th><th>WHY?</th><th>WHY?</th><th>WHY?</th><th>WHY?</th><th>WHY?</th></tr>
<tr><td rowspan="15">A tunnel roof collapsed trapping 6 workers for three hours.

One worker suffered a concussion (serious head injury) and broke her leg while the others had minor injuries.

NOTE: In a complete "Five - Why's" example it is useful to ask why the workers were not using any Personal Protective Equipment (PPE)</td><td rowspan="15">Tunnel was unsupported

NOTE: Only one "why" is shown. Depending on the case, other "why's" might include things like: Tunnel too wide; Heavy rains and poor drainage; Undercutting of highly weathered rock.</td><td rowspan="13">Most workers did not know the rock needed to be supported.

NOTE: Only two "why's" are shown. Depending on the case, other "why's" might include things like: Some workers knew it was high risk but didn't think it important of know how to deal with it.</td><td rowspan="3">They had always worked that way and no one had ever been trapped and injured like that for many years.</td><td colspan="2">Other tunnel collapses were near miss incidents.</td></tr>
<tr><td rowspan="2">People believed it was God to decide</td><td>Attitude about personal responsibility for OSH Risks</td></tr>
<tr><td>Lack of Training to build capacity to take responsibility.</td></tr>
<tr><td rowspan="4">No one told them it was a risk.</td><td rowspan="2">Lack of Training and education</td><td>Only Supervisors received some Technical Training (Why?)</td></tr>
<tr><td>Company didn't have enough resources (Why?)</td></tr>
<tr><td rowspan="3">Communication system not effective</td><td>The employee for OSH Communication had too many other jobs and tasks (Company Attitude) and thought this was less important (Attitude, Accountability Systems).</td></tr>
<tr><td>Supervisors didn't know how (Training) or why to share OSH information (Attitude)</td></tr>
<tr><td>No formal work arrangements with the Company (WHY?)</td></tr>
<tr><td rowspan="6">Supervisor did not advise them</td><td rowspan="3">Supervisor rarely inspected areas or even came underground.</td><td>Supervisor was fearing him/herself and didn't know how to advise workers (Training, Attitude)</td></tr>
<tr><td>Supervisor believed that watching ore coming from the mine was more important than worker safety (Why?) (Attitude)</td></tr>
<tr><td>Supervisor didn't know his/her responsibility in terms of OSH (Training, Accountability Systems)</td></tr>
<tr><td rowspan="3">Supervisor believed that watching ore coming from the mine was more important than worker safety</td><td>Supervisor didn't know his/her responsibility in terms of OSH (Training, Accountability Systems)</td></tr>
<tr><td>Company Attitude.</td></tr>
<tr><td>Lack of Trained Employees to share roles and responsibilities.</td></tr>
<tr><td rowspan="2">Area has not been inspected and approved for Safe Work</td><td>Supervisor rarely went underground.</td><td>See above</td><td>See above</td></tr>
<tr><td>Supervisor didn't know it was there job.</td><td>The Company did not provide them with training.</td><td>Company Attitude and Resources.</td></tr>
</table>

INCIDENTS CAN BE CAUSED BY FACTORS THAT ARE TECHNICAL (PHYSICAL, MECHANICAL, CHEMICAL) AS WELL AS HUMAN (ATTITUDE, SKILLS, KNOWLEDGE) AND ORGANIZATIONAL.

Although all of the "Why's" were not explored in this example (Table 6), it is still useful because it shows some of the **technical causes** (e.g. poor rock strength, lack of technical supports) but it also shows that the **root causes** of this incident are mostly human and organizational, like:

- Poor attitude and lack of personal responsibility for OSH
- Lack of Training in OSH procedures, assessing rock competence and putting up timber supports.
- Lack of Accountability Systems, particularly in relation to Supervisors and the Chief OSH Officer.
- A poorly functioning communication system.

This result is not surprising as poor safety attitudes, unsafe work practices and absent or ineffective work systems are actually the main cause of most accidents!

Filling out the Incident Investigation Form (Table 7) will guide you on the information needed for your investigation. For a major incident, such as in the example above, an Accident Investigation Team (described below) would likely identify even more root causes.

Step 5: ***Identify Corrective Actions.*** Recall in Section 4.1.3, responding to hazards and risks are based on actions to:

- **Eliminate** the hazard/risk by using different methods completely, closing off areas or other alternatives.

If you cannot eliminate the hazard/risk, then you must:

- **Control** the hazard/risk using engineering and technical measures (e.g. like timber supports for the example above).
- **Minimize** the hazard/risk through safe work procedures and good OSH systems.
- **Protect** all individuals from the hazard/risk with Personal Protective Equipment (PPE) that suits their jobs, tasks and areas of work.

Corrective actions should respond to both technical causes (e.g. with controls) and human/organizational causes (e.g. minimize and protect) in order to prevent the incident from happening again.

4.3.4 When to Use an Investigation Team

For serious incidents (see the list of serious incidents, accidents and illnesses), a team of competent technical people should be involved in an investigation. The team usually includes company employees (Mine Manager, Site Supervisor, Chief OSH Officer and technical persons) but, depending on the type and severity of the incident, may also require government officials (e.g. Mines Inspector), medical doctors or even police (e.g. if a fatality occurred).

Although the Supervisor should still follow the procedures above, the Investigation Team will review this initial Incident Investigation Form and may conduct additional and more detailed assessments of the incident. Often times, women or men with specific technical expertise are needed.

An example of an Incident Investigation Form is shown below.

Table Seven: Incident Investigation Form

INCIDENT INVESTIGATION FORM

Section A: Identification Data:

1. Name of Mine:	**2. Mine Area:**
3. Name of Investigator:	**4. Date Investigation Started:**
	5. Date Investigation Ended:

6. Names of Supervisors in Area of Incident (Site/Plant/Mill Manager, Captains, Gang Leaders):

Section B: Basic Incident Data:

7. Date of Incident: Day Month Year	**8. Time of Incident** am pm	**9. Time Shift Started:** **Ended:**

10. Type of Incident: (circle all that apply)
Near miss Incident; Accident leading to Minor Injury; Accident leading to Serious Injury; Sudden Illness; Property Damage

11. Number of Injured/Ill Persons Affected:

12. Did the Incident lead to death? Yes No

13. Type of Property Damaged: (If applicable, circle all that apply)
No property damage; Mining Equipment; Processing Equipment; Vehicles; Buildings; Other (describe):

14. Names of Witnesses to Incident: **Contact Info (tel:)**

Section C: Location of Incident: (circle the option that best describes the location)

15. Surface Location
Open Pit; Near entrance at underground mine; On a roadway; Plant/Mill/Processing Area; Stores/Workshops; Office/camp/facilities; Other (describe):

16. Underground Location
Entrance/headframe; Slope/Inclined Shaft; Tunnel; Intersection; Vertical Shaft; Other (describe):

17. Describe Location:

Section D: Incident Causes

18. Incident Code (Circle)**:**
Rock fall/slide/roll; Roof/tunnel collapse; Pit wall collapse; Hoisting/Hauling; Flooding; Explosives; Electrical; Equipment/Machines; Hand Tools; Fire; Transport; Tailings Impoundment; Waste Rock Pile; Office/Facilities; Other

19. Describe the Incident: Give a step-by-step description of what happened and main factors that caused it. The more serious the incident, the more detail is needed (Write on the next side and/or attach a second page if needed)

20. Technical Factors/Causes of the Incident (if any):	**21. Corrective Actions Needed:**
22. Human Factors/Causes of the Incident (if any):	**23. Corrective Actions Needed:**
24. Organizational Factors/Causes of the Incident (if any):	**25. Corrective Actions Needed:**

Section E: Consequences of the Incident

26. Name(s) of Injured/Ill Person(s): (attach a separate page if more than 4) Leave blank if no persons ill/injured.	**27. Details of ill/injured person**							
	Circle One	**Work Activity When the Person became Ill or Injured**	**Gender** (circle one)	**Date of Birth** Day	Month	Year	**Part of Body Injured or Type of Illness**	**Number of Work Days Lost**
1.	Employee Subcontractor Visitor Other		Male Female					
2.	Employee Subcontractor Visitor Other		Male Female					
3.	Employee Subcontractor Visitor Other		Male Female					
4.	Employee Subcontractor Visitor Other		Male Female					
5.	Employee Subcontractor Visitor Other		Male Female					

28. What directly caused the injury or illness?

29. What treatment was given to injured/ill persons?

30. What property was damaged and what was the extent of property damage? Leave blank if no property damaged.

Section F: Submission of Incident Investigation Form

31. Name of Person Completing the Form: **Title:**

32. Date Submitted:

This space available for any other comments or details (this may include a numbered list of any evidence collected):

OFFICIAL USE ONLY

Action Required: **By Who:**

Priority (circle one):

Immediate Action Needed
Senior Management Attention Needed
Management Responsibility Specified

Other Comments

_____ Signature of Senior OSH Official

_____ Date

4.4 Early and Safe Return to Work Program

4.4.1 When to Implement an Early and Safe Return to Work Policy

Unfortunately, and even if good OSH systems are in place, accidents happen in mining and miners or workers are getting injured or ill. The companies OSH system and legal framework cares for health insurance and medical treatment.

In any case, such an injury causes disruption of the work and income of the injured, which is likely to cause social and economical problems for him/her and his/her dependants. Its also causes problems for the mines, workmates, fellow mining-gang members and mineral production because (s)he is not longer productive, leaving a gap in the workforce.

Therefore, it is not only a moral obligation for the company and fellow miners but also in the interest of all parties to develop and implement an Early and Safe Return to Work Policy in case of occupational injuries and health problems.

4.4.2 Before You Begin

Before you start your Early and Safe Return to Work Program you should:

- **Make an Agreement with Artisanal Mining Gangs.** Both gang members and their respective gang-leaders should be involved. Artisanal miners are not employed by the mining company but are subcontracted as groups of miners or “gangs” in most Rwandan Mines but they are the still the responsibility of the Companies who depend on them for production!
- **Seek support and cooperation from the local health centre or clinic** since it will also have to play an important part in the implementation of the policy.

Depending on the nature of the issues arising the Joint OSH Committee is likely to play a critical role in the smooth implementation of this policy.

4.4.3 How to Implement an Early and Safe Return to Work Program

Different situations need different approaches. Main types of OSH illnesses and injuries are:

a) *Minor Injuries*: Treatment can be given on the spot or at the nearby clinic. The worker can continue to work or gets the rest of the shift of and works again the next shift.

b) *Lost Time Injury:* The miner stops work for more than one shift of duty. However, it is likely that (s)he recovers 100% and will be able to do the same job as before.

c) *Partly Disabling Injuries:* The miner is likely to recover and will be able to work again. However, it is likely that (s)he will not recover entirely. Therefore, a alternative (less heavy) workplace should be found.

d) *Disabling Injuries:* The worker is unlikely to recover to an extent that (s)he is able to work in the mine again.

e) *Occupational health problems and illnesses*. These can include *acute* illnesses (like cholera cause by poor sanitation and hygiene) or *chronic* illnesses (like silicosis from repeated exposure to stone dust).

Possible Ways to Handle these Situations:

(a) Minor Injuries:
Depending on the seriousness of the injury, the miner may get the rest of the shift of. In any case, (s)he gets a full share of the day’s production/income and continue to work the next working day. In case there is a need for a follow up check at the clinic a few days later, the same procedures applies.

(b) Lost Time OSH Injury or Illness:
The responsible doctor or the local clinic estimates the necessary time for treatment and recovery (in written form). There are generally three options:

(i) *A clear end-date* for the absence from work is given: (e.g. 3 days). After this period, either the worker reports at work again or, if not fully recovered, goes back to the doctor/clinic to check up. The doctor/clinic either declares her/him recovered sets a new date.

(ii) *Open-ended sick leave*: The doctor/clinic is unable to estimate the time for recovery at this stage. The way forward, further treatment and regular check-ups are recommended (and information is given in writing to the mine management).

(iii) *After the primary recovery phase*, it is agreed between the mine management, the clinic and the worker that, even if the worker is not fully recovered yet, (s)he can return to work, doing e.g. light-duty work or work which is not affected by the type of the injury and which does not jeopardize, hinder or delay medical treatment or the recovery process.

Necessary measures that the Company must take when a lost-time injury occurs include:

- ***Filling the gap:*** In all cases, the absence from work is temporarily. The mine-management or the gang leadership find ways to temporarily fill the gap in the work force to ensure (as well as possible) uninterrupted production and continuation of work by reorganising or reshuffling of the workforce or, if necessary, by employing casual labour. In any case, it must be insured that the injured can come back at his/her old (or similar) workplace after full recovery.
- ***Financial Support:*** Since everybody working in the mine has a valid health insurance, cost for medical treatment are covered. However, since the worker/miner is (most likely) the bread-winner for his/her family, additional financial support is needed. This support should be shared between the mining company and the fellow gang members. The contract between the mining company and the artisanal miners (and if applicable with other sub-contractors) must include such an agreement. The agreement determinates, that for the time of the injured miner's absence from work, the gang contributes "X%" of a full share of production while the mining company contributes a lump sum of "X RFr" per day of absence. The total of this financial support does not necessarily match the miners usual income but must be sufficient to avoid serious social hardships for the miner and his/her dependants.
- ***Moral and Practical Support:*** Beyond financial support and contractual and legal duties, there is certainly a moral obligation for the mine management and colleagues and fellow miners to ensure that every necessary support is given to the injured and his/her family to cushion the negative effect of the accident. This can be done in various way, e.g. by checking if the injured is treated appropriately at the clinic or offering informal support to the family (e.g. logistically, transport, etc.) if appropriate and needed.

(c) Partly Disabling Injuries:
The miner is likely to recover and will be able to work again. However, it is likely that (s)he will not recover entirely. As an alternative, less heavy or "lighter" work should be found. After the primary recovery phase, the responsible doctor/clinic writes a detailed medical report stating the injured abilities and (likely permanent) disabilities and lists jobs (s)he can/should do or should not do.

Based on this report, it has to be agreed between the mine management, the doctor/clinic and the fellow gang members and the worker him/herself that, even if the worker is not fully recovered yet, (s)he can return to work, doing e.g. light-duty work or work which is not affected by and is appropriate to the nature of the disability and which does not jeopardize, hinder or delay further medical treatment or an further recovery process.

An appropriate job or workplace can be found in the miner's gang and (s)he continues to be an artisanal miner. However, it may be a more likely and more appropriate solution to offer him/her permanent employment in the mining company.

The Joint OSH Committee (JOSHC) can play an important role in finding an appropriate solution.

(d) Disabling Injuries:
The worker is unlikely to recover to an extent that (s)he is able to work in the mine again. The formal social security takes over the retirement procedures. However, this may not be sufficient to avoid social hardships.

Similar to point (b) above, as part of the general contract between company and miners, a joint social fund should be created which is jointly funded by the company as well as the artisanal miners. This fund can be used in such tragic cases to cushion or avoid extreme social hardships for the injured miner and his family.

Additionally, in the likely case that the injured mine was the brad-winner for his family, employment in the mine or membership in the miner's gang should be offered to another member of his/her family to take over the breadwinner's role.

(e) Occupational Health Problems and Illnesses:
In principle, Occupational Health illnesses and diseases should be handled using the same approached and policy as for injuries as described above. (i.e. whether it is minor, results in lost time, permanent illness but return to some type of work is possible, or a permanent illness where return to work is not possible).

4.5 Communication Model

4.5.1 Who Communicates with Whom?

Communication is key for a working OHS-system and policy in and around a mine. Different workers in the mine and residents of the mining community have various approaches and different points of view, different jobs to do and different interests and agendas to follow.

Main partners and stakeholders that need to communicate OHS issues are:

- Mine management
- Mine employees
- Sub-contracted artisanal miners
- Informal goods providers and casual labourers.
- The community affected by the mining activities.
- Local and governmental authorities

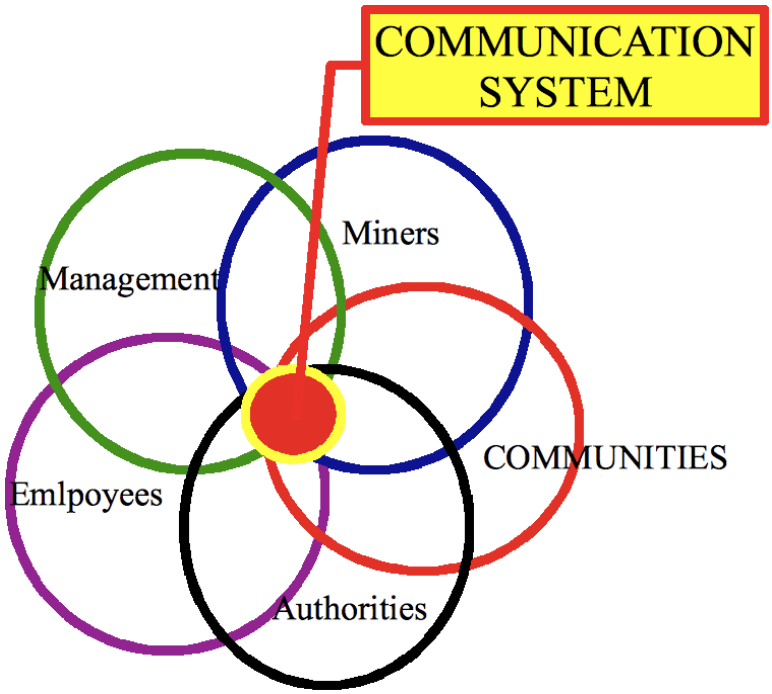


Figure Seven: Communication System (Source:??)

4.5.2 Communication within the Mine's Structure

The communication within the mine between management and employees/miners is certainly most important to improve and maintain OHS standards. Artisanal miners and workers do have a different approach and point of view regarding OSH issues than the mine management. Accordingly, the may have other ideas and more immediate experiences in how to implement an OSH policy on the ground. Therefore, it is very important create a communication-friendly environment that enables good two-way-communication and free information flow "up and down" the mine's hierarchy and structure.

There are several potential communication channels in the mine. All of them should be established, since all of them are interlinked and for a holistic communication system and environment.

Possible communication channels are:

- **One-way:**
  - Formal reporting system
  - Orders and publications on bill-boards, etc.
  - Signposts
- **Two way:**
  - Day-by-day ongoing communication between management – supervisors – workers/miners.
  - Shift-change/hand-over meetings (e.g. at the start or end of a shift)
  - Training, seminars, sensitization workshops, etc.
  - The joint OHS Committee
  - A grievance-system
- **Other innovative initiatives, such as:**
  - Competitions & awards (e.g. mine rescue competitions, awards for the "safest gang")
  - Messages in unusual places, (e.g. workers overalls)
  - Street theatre (e.g. for HIV/AIDS-awareness)
  - Etc.

4.5.3 Useful Tools for Communication within the Mine Structure

There are many things to include in your communication model that will help build a culture of safety and health! These include:

1. A Formal Reporting System
The formal reporting system is the backbone of communication within the mine. (for details, see Section 1.2 that described reporting through lines of authority). Don't rely on formal reporting completely - it is strictly one-way communication and cannot be used to communicate OSH issues "down" to miners and workers!

2. Orders, Notices and Publications on Billboards and Notice Boards
Orders and publications regarding OSH issues can be placed on bill-boards at strategic places, such as the mine-office, the main store, or other places where all miners and employees are likely to pass through sooner or later. Notices can also be handed out to Line Managers, Vein Captains, Association Heads and other supervisors.

Make sure you are using a language, which is understood by the workers and miners. In Rwanda use Kinyarwanda (together with French and English).

3. Signs and Posters
Signposts and posters are a cheap and effective way of getting OSH messages across (Fig. 8). Use pictures, cartoons and drawings as "a picture speaks a thousands words" and can be more effective than just text (especially if illiteracy rates are high). Often its best to use both together to get a message across. When written text is used on posters or signs, make sure you are using a language, which is understood by the workers and miners. In Rwanda use Kinyarwanda (together with French and English).

A creative way to get the workforce involved in OSH is to have a competition for groups to design the best health and safety poster. The winners could receive a small prize and a local artist/graphic designer could turn the drawing/slogans into a professional poster or sign to place around the mine.

These signs have a clear message but would be more effective if they had cartoons or diagrams together with text!

Figure Eight: Post Signs and Posters Near to the Source of Risks
(Source: Hinton, 2009; Small Scale Mining Handbook)

4. Informal, Ongoing and Day-to-Day Communication

Informal, day-to-day communication between management-supervisors-workers/miners is the most important communication tool within the mine. Ensure everybody has a good communication base with everybody, especially "up and down the mine hierarchy". Workers are one of the best sources of hazard and risk information and informal communication also creates a way to provide hands-on technical advice and guidance about safe work methods and procedures!

It is of special importance that, whenever there is a change of responsible personnel, there is no communication dead-lock. Information and communication should continue to flow freely and no important information should get lost. This includes:

- ***At a shift change***, a short meeting between in-coming and out-going personnel responsible for OSH issues must take place. Usually issues can be passed on verbally. However, important issues should be handed over in short written forms as well or reported directly to supervisors who are accountable to take action.
- ***When more permanent changes of personnel occur***, such as new managers or supervisors are recruited and take over from there pre successors, it is of special importance that there is a proper hand-over period and proper hand-over procedures including written hand-over notes are followed to ensure communication continues and no important information gets lost.

  This means any new supervisor or worker should be trained and sensitize *before* they start work about the organizational structure (Fig. 1) and lines of authority and communication as well as the OSH Policy and related rules and procedures.

5. Training, Seminars and Sensitization Workshops

Training of staff, regular or special seminars and sensitization workshops or meetings are an excellent way to communicate OSH issues. A starting point for Rwandan companies will be to introduce the OSH Policy and Systems to managers and supervisors through interactive sensitization meetings, provide related training to them and then take the OSH System to the broader workforce. This should be a permanently ongoing process and take place throughout all levels of the organization, from management down to the workforce.

Section 2.9 gives practical guidelines on how to set-up your own workforce training program.

**ONE OF THE BEST WAYS TO IMPROVE HEALTH AND SAFETY ATTITUDES AND PRACTICES IS ONGOING, DAY-TO-DAY INFORMAL COMMUNICATION!
MAKE HANDS-ON TRAINING, ADVICE AND ENCOURAGEMENT PART OF A DAILY ROUTINE.**

4.5.4 Set up a Joint OSH Committee (JOSHC) in the Mine Structure

A Joint OSH Committee (JOSHC) is usually made up of:

- The Mine/Site Manager
- The Chief OSH Officer
- Line Managers (Mine sites, the mill, workshops, stores and office/admin) and other supervisors (e.g. vein captains, gang leaders or – if too many – their elected representatives)
- Employees' Representative
- At least one elected Miners' Representative (this should include both formal and informal miners and both women and men).

To ensure lines of communication reach *all* parts of the workforce (particularly considering gender concerns and issues), representatives of women workers and informal goods or service providers should also be included.

When setting up the JOSHC keep in mind:

- Roles and responsibilities of the JOSCH (Section 3.2.2). Each meeting should have an agenda and pre-set time limit (unless an extension is agreed upon by members).
- Committee Members should elect one of the members to chair the meetings (JOSHC Chairman or Chairwoman) and a Vice-Chairman or Vice-Chairwoman who may also be useful to help follow up issues and actions items and represent the Chairman/woman if they are occasionally be absent. The Chairperson should set the agenda (usually with the Mine Manager or Chief OSH Officer) and make sure time is kept.
- Committee Members should also elect another member to be the JOSHC Secretary, who is responsible for writing, distributing and submitting Minutes of the Meeting. Minutes of Meetings should be take for all meetings and include *both* main points and issues discussed and action items (actions to be taken, by who and by when).
- The JOSHC should meet *at least* once monthly *and* on an ad hoc basis in the case of an urgent OSH issue (such as a major accident or urgent and serious risk) or at request of one of its members (e.g. in response to a serious concern expressed by workers).
- JOSHC members may need training to effectively fulfil their roles and responsibilities. Also consider that some members get paid according to production and their lost work means lost money out of their pocket. Meetings should be in a comfortable environment and water/sodas should be provided (as well as food in the event of very long meetings).
- The views of all JOSHC members should be welcomed and encouraged. Everybody in the committee has the right to be heard and treated with dignity and respect. Always include "Any Other Business" (AOB) as the last item on the agenda so members are free to introduce additional concerns and issues.

Proposed roles and responsibilities for the JOSHC are outlined in Section 3.2.2. The JOSHC should also be aware of their critical roles in:

- Promoting positive OSH attitudes and behaviours through example and leadership.
- Encouraging open lines of communication and "open door policies" and receiving and following-up on reports, concerns and information from the workers they represent.
- Advocating for sufficient resources to OSH Programs, including those related to training.
- Ensuring that corrective or preventative action is taken in a timely manner and persons, including those in positions of authority, are held accountable for doing so.

4.5.5 Establish a Grievance System

Establishing a working environment that enables open and safe ways communication of sensitive issues and respects basic human rights will serve to increase productivity, loyalty and commitment while improving commitments to safety and improving OSH performance.

The basis for creation of a Grievance System within the organization is clear:

- Every Human Being has the right to be treated with dignity, to just and safe working conditions and to live in freedom from degrading treatment including verbal, physical or sexual harassment or abuse, discrimination, exploitation or other forms of mistreatment.
- As Miners improve their safety and health attitudes, they can help ensure that their supervisors, line managers and fellow workers are behaving and taking action in a manner that is consistent with Company policies, including those related to OSH, Gender and HIV/AIDS.

Beyond the formal communication hierarchies, every member of the mine or mining community should know how to report, sensitize or complain about OSH issues and other concerns in the mine. Although many Managing Directors, Mine Managers and others encouragingly claim to have an open-door policy, practical experience shows that most workers are hesitant to “talk to the boss” directly and may fear repercussions of doing so (particularly if it implicates their manager or supervisor).

Depending on the size of the mining operation, the easiest form of an appropriate Grievance System is appointing (or having workers elect) one or several Ombudspersons (ideally at least both a woman and a man), which enjoy the trust of the workers and miners and maintain ongoing communications and good relations with the upper management.

The Ombudsperson(s) should be made known to all workers and reachable through:

- Scheduled consultation-hours.
- Ad hoc meetings.
- By phone.
- Using a “complaints box”, where anybody can drop written messages expressing their concerns or complaints (anonymously if they choose). Given literacy issues, Companies should *not* solely rely on this form of communication.

The Grievance System should be founded on the following principles:

- Everybody has access and everybody has the right to be heard.
- Every contribution, complaint, suggestion or report is treated seriously and followed up appropriately with feedback given to the complainant.
- Sensitive and personal issues are treated sympathetically and, unless the complainant expresses otherwise or legal action is needed, confidentially.
- Sensitivity and responsiveness to gender issues by the Ombudsperson.
- Thinking “safe” and reporting OHS issues is welcomed and encouraged. Being OSH sensitive is not seen or treated as “cowardice”.
- Reporting on OHS issues or other concerns will not have a negative effect on the workers/miners position at the workplace or his/her career.

A FREE, OPEN, CONFIDENTIAL AND RESPONSIVE GREIVANCE MECHANISM CAN INCREASE PRODUCTIVITY, LOYALTY AND COMMITMENT WHILE SUPPORTING COMPANY POLICIES AND OBJECTIVES.

4.5.6 Other Innovative Communication Channels and Initiatives

There is no limit to innovative initiatives and approaches to improve communication and getting OSH messages across.

Some examples are:

- ***Competitions:*** Running competitions between artisanal miners' gangs and the company's workforce is a fun and stimulating way to build skills, knowledge and improve attitudes. Example topics include mine rescue/emergency response simulations, a safety poster or slogan competition or the most creative, practical and effective way to deal with certain OSH situations.
- ***Awards:*** Good practices and behaviours should be rewarded. Giving awards for "safe-initiatives" or "safe records" on a monthly basis to gangs, groups or individuals is an inexpensive and useful way to highlight OSH commitments and recognize workforce efforts. Ad hoc awards, such as when reporting of or responding to a particularly hazardous situation averts a potentially catastrophic emergency, are also useful ways to build awareness and morale.
- ***Creative Signs and Slogans:*** Putting OSH messages and slogans on unusual places, such as on workers overalls in addition to the usual company name.
- ***Street Theatre or Musical Performances:*** Inviting and actively partnering with other local stakeholders such as NGO, community-based organizations (CBOs) or youth to get involved in communicating special issues such as HIV/AIDS can help build relations with the local community and build workforce awareness and understanding.

4.5.7 Communication with Local Government and Authorities

Rwandan laws determine communication and reporting requirements for mining companies. However, these are minimum requirements. Especially on OSH issues, the mining company should try to establish formal and informal communication-channels with central government authorities as well as authorities at district and local levels beyond minimum legal requirements. It is particularly important to pre-establish these communication channels in the event of important issues such as accidents or environmental emergencies.

4.5.8 Communication with the Community

It is generally and beyond OHS issues wise to maintain good relations with the local communities affected by the mining activities.

Table Eight: Reasons for Effectively Engaging Local Communities in OSH Issues

Costs of *not* Engaging Local Communities in OSH Issues	**Benefits of Engaging Local Communities in OSH Issues**
• Tarnished reputation of the Company • Accidents due to uncontrolled artisanal mining activities causing stoppages or delays • Legal liability for accidents, injuries or illnesses of community members on the company's concession • Costs of restoration of environmental destruction. • Production disruptions due to conflicts with and demonstrations by local community members	• Avoiding the high costs of conflicts • Gaining a comparative advantage (better access to mineral consent through community consent) • Gaining the "social license to operate" (support from concerned stakeholders) • Addressing issues of community concern before the project begins is likely to be more successful and cost-effective than responding to community opposition later on.

There are many ways to establish a good communication base with the affected communities surrounding the mines. Introducing a Grievance System similar to that described above or a Liaison Officer (or Office) who is known to all community members is a good start.

4.6 Workforce Training Program

To build a culture of safety at the mine, a workforce training program will be needed so that the workforce (employees and subcontracted workers) understand:

- Safe work practices and habits for their different jobs and functions.
- How to identify possible dangers and prevent incidents from occurring.
- How and when to report incidents (near misses, accidents, injuries, illnesses).
- What to do when an accident, illness or injury happens.
- Roles and responsibilities of women and men in different jobs and functions.

Most small companies have limited resources to train their workforces all at once. If site managers, captains, gang leaders and other supervisors are the first to receive training, this will help improve attitudes and sense of responsibility towards OSH for themselves and others. Over time the training can be expanded to all other workers (starting with induction training). There are four main types of training that should be conducted (Table 9).

Table Nine: Workforce Training Program Components

Type of Training	Main Components
1. INDUCTION TRAINING This should be done for *all* new women and men workers at the mine. This is a minimum training and other types of training will be needed.	(a) The OSH Policy (b) Basic OSH Rules at the Site (c) Personal Protective Equipment (PPE) and how/when to use it. (d) Identifying Hazards and Risks, (e) Types of incidents and how to report them.
2. ONGOING AND ON-THE-JOB TRAINING Women and men employees and subcontracted workers should receive on-the-job training.	(a) ***Hands-On Coaching:*** Those supervisors (managers, captains, etc) who first receive specialized training through the program should be responsible for giving advice to those women and men they supervise in their day-to-day functions. (b) ***Mentoring:*** New workers (employees and subcontractors) should always work in partnership with senior, skilled workers for at least the first three months of work, especially when they are in technical, high risk positions (e.g. underground, explosives handling). (c) ***Refresher Training:*** Usually on an annual basis, workers receive "refresher" training similar to the Induction Training Program. Understanding of the content of "induction training" should be much higher.
3. SPECIALIZED TRAINING This is OSH training for specific categories of employees and subcontracted workers.	(a) ***OSH Procedures:*** Special training for workers responsible for: workplace inspection; preventative maintenance; incident investigation; and hazard and risk identification and analysis. (b) ***First-Aid:*** At least one person in each work team and a minimum of one of every ten workers in a group should receive first aid training. (c) ***Emergency Response:*** Men and women workers should receive training in how to respond when a serious incident occurs. More intense training is needed for high risk positions (e.g. underground, open pits, the plant/mill) (d) ***Mine Rescue:*** A special mine rescue team should be trained to respond in the case of a serious incident, such as a roof or pit wall collapse causing entrapment of workers.
4. SKILLS TRAINING *Any* training to build skills of workers in their job tasks should be *combined* with OSH. This should include hazard and risk identification for different tasks, responding to these risks and protection measures.	The type of skills training depends on each of the types of jobs/task at a specific operation. A few examples include: ▪ Operation and maintenance of machinery, equipment and tools (e.g. jackhammers, motor vehicles, jaw crushers). ▪ Underground and/or surface mining methods. ▪ Drilling, blasting and explosives handling. ▪ Office and stores procedures.

4.6.1 Training Methods

Most accidents, injuries and illness at mine sites are caused by lack of knowledge or skills and poor safety attitudes. Adult learning is about positively changing behaviour and practices in response to training needs. Changing behaviour requires building:

- **Knowledge.** *This is the facts or information that people know.* For example, someone may know where minerals are located but may not have the skills to mine them.
- **Skills.** *This is the ability to do something.* For example, someone may know *how* to use a jackhammer but may not have knowledge of maintenance procedures.
- **Attitudes.** *How people act in or feel about a situation.* This also includes the values that people have. For example, someone may have skills and knowledge to identify and respond to hazards and risks, but may not think it's worth the effort to take action.

The most suitable training method to use depends on whether the priority is building knowledge, skills or attitudes. Because everyone learns differently, **using a combination of methods is often the most effective way to ensure people really learn the material**. For example, a presentation on Incident Investigation can be integrated with a discussion and followed by a field-based practice exercise and a final feedback discussion of how it went and how and when people will regularly use it.

Table Ten: Methods to Use during Workforce Training
(Adapted from: Hinton et al, 2007)

Kind of Learning	Training Methods	Examples of When to Use Them
KNOWLEDGE [Facts, Information]	• Lectures and presentations • Readings • Films and Videos, Radio • Brainstorming (together or in small groups)	• Company OSH Policy, Roles and Responsibilities. • Company OSH Procedures. • Types of PPE. • Types of Hazards and Risks. • Types of incidents.
SKILLS [Manual skills, thinking skills, planning skills, etc)	• Demonstrations. • Instructions followed by practice exercises with feedback to correct mistakes. • Simulations and mock exercises (in the classroom and/or the field). • Site walks	• How to conduct an Incident Investigation or Mines Inspection • How to do Preventative Maintenance • How to use PPE • How to identify and respond to hazards and risks. • How to coach and mentor junior workers. • How to report a hazard or risk. • How to respond to a minor and serious accident or illness. • How to perform basic first aid. • How to use and maintain a tool or piece of equipment.
ATTITUDES [values, what people think about things, how they react to things	• Posters and visual aids • Group Discussions (small groups, large groups) • Role Plays • Simulations and Mock Exercises.	• Importance of the OSH Policy, HIV/AIDS Policy and Gender Policy • Why report an incident. • Using PPE • Good sanitation and hygiene practices • Importance of maintenance of equipment and tools. • Taking corrective action. • Stopping work in unsafe areas. • Explosives handling and use.

The Chief OSH Officer (who may be the Mine Manager) should take primary responsibility for designing sessions for (i) Induction Training; (ii) Ongoing and Hands-on Training; (iii) Specialized Training and (iii) Skills Training. He or she may need to bring in technical experts for certain types of training (e.g. mine rescue, maintenance of mill equipment).

Anyone who does the training, whether an employee or technical expert, should be aware that "*talking is not teaching*". Because of the way people learn, **too much time spent on lectures and presentations can fail to result in *real* learning and can waste your money and time.** Any trainer (even external technical experts) should be familiar with these training methods and carefully review Section 4.6.2: Tips for Effective Training.

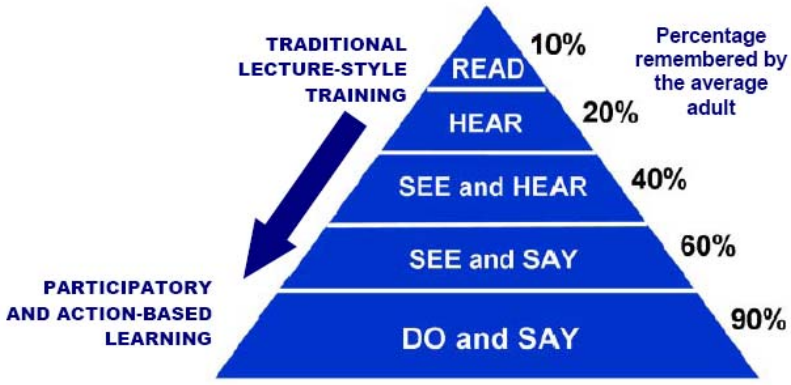
Table Eleven: When and How to Use Main Training Methods
(Adapted from: Hinton et al, 2007)

Training Method	Advantages	Challenges	How to Use It
PRESENTATIONS AND LECTURES **Use it To:** ▪ Introduce a new subject. ▪ Provide an overview. ▪ Share facts or statistics. ▪ Talk to/with a large group.	• Covers a lot of material in a short time • Useful for large groups • Can be adapted to any kind of learner • Can take place before more practical training techniques • The lecturer has more control than in other situations	• A lot of one-way communication • Lecturer needs skills to be effective. • Inappropriate for changing behavior or for learning skills • Learner retention is not as good as other methods. • Usually very formal. • A lot of advance content preparation	1. Introduce the topic: Outline what you are going to tell learners. 2. Present the material using visual aids. Avoid too many words. 3. Invite learners to ask questions during the presentation to help keep their attention. 4. Discuss the content and together make conclusions. 5. Ask them how the presentation relates to their own jobs, tasks and functions. 6. Follow with some sort of other method to build skills or change attitudes.
DEMONSTRATION **Uses it To:** ▪ Build skills in specific techniques or procedures. ▪ Model a step-by-step approach.	• Easy to focus learner's attention • Shows practical applications of a method • Involves learners when they try the method themselves. • Literacy not important.	• Requires a lot of planning and practice ahead of time • Demonstrator needs to have enough materials for everyone to try the method • Not useful in large groups • Must give feedback to learners when they try themselves.	1. Introduce the demonstration—what is the purpose? 2. Present the material you're going to use 3. Demonstrate 4. Demonstrate again, explaining each step 5. Invite the learners to ask questions 6. Have the learners practice themselves 7. Discuss how easy/difficult it was for them—summarize. 8. Ask them how the demonstration relates to their own jobs, tasks and functions.
SIMULATION OR MOCK EXERCISE **Use it To:** ▪ Teach decision-making in "real" situations without real consequences of their decisions ▪ Apply knowledge, develop skills, and examine attitudes in an everyday situation.	• Practical • Learners are able to discover and react on their own • High involvement of the learner • Immediate feedback. • Literacy not important. • Excellent method for emergency response, first aid training, mine rescue and other serious OSH needs.	• Time-consuming • The facilitator must be very well-prepared, especially with logistics • A simulation is often a simplistic view of reality. Incidents are usually much more complicated when they happen.	1. Prepare the learners to take on specific roles during the simulation 2. Introduce the goals, rules, and time frame for the simulation 3. Facilitate the simulation 4. Ask learners about their reactions to the simulation 5. Ask learners what they have learned from the simulation and develop principles 6. Ask learners how the simulation relates to their own lives 7. Summarize

Training Method	Advantages	Challenges	How to Use It
CASE STUDY **Use it To:** ▪ Provide real or made-up description of an event or events so it can be analyzed by learners ▪ Help build problem-solving skills (as individuals or in groups/teams)	• Learner can relate to the situation if properly designed. • Involves an element of mystery (solving the problem) • The hypothetical situation does not involve personal risks • Learners are involved.	• The case must closely relate to the learners' experience, tasks or functions. • Problems can be too complicated. • There is not always just one right solution • Requires a lot of planning time if you need to write the case yourself • Need to carefully design discussion questions. • Literacy may be an issue.	1. Introduce the case 2. Give learners time to familiarize themselves with the case 3. Present questions for discussion or the problem to be solved 4. Give learners time to solve the problem(s) 5. Have some learners present their solutions/answers 6. Discuss all possible solutions/answers 7. Ask the learners what they have learned from the exercise 8. Ask them how the case might be relevant to their own jobs, tasks and work environments 9. Summarize
SMALL GROUP DISCUSSION **Use it To:** ▪ Allows learners to share their experiences. ▪ Builds problem-solving skills ▪ Helps participants learn from each other and promotes team work ▪ Clarifies personal values ▪ Gives participants a greater sense of responsibility.	• Learners develop greater control over their learning • Participation is encouraged • Allows for reinforcement and clarification of lesson through discussion. • Help involve and build understanding of learners who are intimidated by large group work. • Efficient way to reduce potential boredom by breaking up presentations and lectures. • Useful for policy issues or identifying hazards and risks and possible corrective actions in their work areas.	• The task and time limits for discussion needs to be very clear (planning needed) • Need to carefully design discussion questions or tasks. • Participants should be able to listen to each other, even if they don't agree • Facilitator must have skills to make sure discussion is not dominated by any one or two people and all are encouraged to participate. • Questions should be designed help guide the discussion	1. Arrange learners in groups of four to eight people. 2. Introduce the task that describes what should be discussed 3. Ask each group to designate a discussion facilitator, a recorder, and a person to present the findings to the larger group 4. Check to make sure that each group understands the task 5. Give groups time to discuss—the trainer shouldn't get involved unless the learners have questions for the trainer 6. Have one person from each group summarize the findings of the group (this could be a solution to a problem, answers to a question or summary of ideas) 7. Identify common themes that were apparent in the groups' presentations 8. Ask the learners what they have learned from the exercise 9. Ask them how they might use what they have learned
ROLE PLAY **Use it To:** ▪ Help change people's attitudes ▪ Enable learners to see consequences of their actions on others ▪ Help learners to see how others might feel/behave in a given situation ▪ Help learners explore alternative approaches to deal with situations	• Provide a safe environment to explore problems they may feel uncomfortable about discussing in real life • Fun, interesting and keeps learner's attention • Simulates the real world. • Also good for sensitive topics (e.g. HIV/AIDS; effects of a debilitating injury on family members, abusive supervisors)	• Need to prepare actors a bit on the objectives. • A role play is spontaneous — there is no script to follow • Actors must have a good understanding of their role for the role play to succeed • Actors might get carried away with their roles.	1. Prepare actors before so they understand their roles. 2. Set the climate so the observers know what the situation involves 3. Watch the role play 4. Thank the actors —be sure that they get out of their roles and back to themselves. 5. Share the reactions and observations of the observers 6. Discuss different reactions to what happened 7. Ask the learners what they have learned and develop principles 8. Ask the learners how the situation relates to their own lives 9. Summarize

4.6.2 Tips for Effective Training

Important points to remember when designing and running training are:



- **Talking is not teaching.** Trainers often make the mistake of giving too much content by giving long lectures. Use the principle of 1 part presentation to 5 parts participation.
- **Support Participation.** Training sessions should *not* be run like a primary or secondary school classroom. Adult learners must be active participants. They should have an opportunity to share knowledge and experience and learn from each other. Every trainee's knowledge and experience should be valued and respected.
- **Training should directly relate to the trainee**. Motivation to learn is highest when it meets the immediate needs of the learner. Make sure any training session ends with asking whether the training was useful to them and how they will use it in their lives.
- **Allow time to think about what the content means**. People learn best when they find the answers themselves. A trainers role is to *guide* participants to these solutions.
- **Provide positive and useful feedback**. If someone gives an incorrect suggestion or answer, feedback should be corrective and supportive. If you tell a person outright they are wrong, laugh or devalue their contribution, they are unlikely to participate any more. Using phrases like "*that's one idea, perhaps another way could be…*", asking other group members to respond to a suggestion or asking questions that lead participants to the correct conclusion are more positive ways to give feedback.
- **Provide a safe atmosphere.** A cheerful, relaxed person learns more easily than one who is fearful, embarrassed, or angry.
- **Create a comfortable environment**. A person who is hungry, tired, cold, ill, or otherwise physically uncomfortable cannot learn with maximum effectiveness.

Using these principles in training helps motivate people to learn and develop positive attitudes about OSH.

BOX SEVEN: WHAT MAKES A GOOD TRAINER

Sometimes women or men who are *not* technical experts are excellent trainers and sometimes technical experts are poor trainers. Anyone can become a good trainer by:

- Creating a friendly, fun and open learning environment.
- Respecting your trainees, their opinions and knowledge.
- Making sure that trainees also show respect for each other, so everyone is comfortable.
- Encouraging participation and asking lots of questions of trainees.
- Not answering all questions themselves. Let participants do this.
- Explaining things simply and in ways that people understand. Use analogies, tell stories, give examples and ask trainees to try and explain things themselves. Use local language.
- Being organized, preparing an agenda, any materials and handouts needed before you start.
- Keeping a positive attitude!

4.6.3 Designing Training Sessions

Guidelines for essential components of the OSH System provide a good starting point to develop content for training sessions. Some important aspects of critical training sessions are outlined in this section for:

1. Prevent, Control and Protect from Common Hazards and Risks.
2. Reporting an Incident
3. How to Respond to an Accident or Sudden Illness
4. Basic First Aid Training

Although basic guidelines are suggested for these sessions, content must be developed and each training session fully designed. Follow these steps:

Step One: Write Learning Objectives
Write objectives for each training session that are SMART (Specific, Measurable, Achievable, Relevant and Time-bound).

- Use these objectives to introduce the beginning of a session by presenting objectives of what people should know and be able to do by the end of the session.
- At the end of the session, you can evaluate the training with questions and answers to check whether your training was effective.

Step Two: Develop an Agenda and Prepare Content
A training agenda is a breakdown of time for your training session. The total time you have available will determine:

- The content to include and how you will cover it.
- The training methods you use and how you use them.

Step Three: Develop a Training Budget
To develop a budget for a training session, you must know:

- How many people will be trained.
- What materials and visual aids will be needed.
- Where people will be trained.
- How long our training session will be (remember that lunch and tea breaks may be needed).

Special measures may be needed to encourage women workers to fully participate in and benefit from training. This might include:

- Separate training for women. In some communities, women are less likely to speak freely if men are present. Talk to a group of women on the site in a small informal meeting to sensitively discuss whether they would be more comfortable in this situation.
- Activities and refreshments for infants and small children may be needed (e.g. for panners who may normally bring kids to work out of necessity).
- Sometimes management may need to talk to women's spouses to get permission to attend training.
- In a lot of places, there is a "gender gap" between women and men in terms of education levels, literacy and language. Adapt the overall content and methods for this.

Remember that some training sessions (e.g. First Aid Training, Maintenance of Equipment) will likely require that the Company bring in an expert.

Training Topic #1: Prevent, Control & Protect from Common Hazards and Risks

Although some dangers can be eliminated completely, most require action to control and minimize the likelihood that risks will occur and/or their impact will be reduced. Following an exercise on how to identify common hazards and risks in specific work areas (designed based on Section 4.1), a training session on this topic should include co-identifying measures to eliminate, control and minimize them.

A training session may include:

Step One: What is a hazard? A risk? Together discuss of what it means to eliminate, control, minimize and protect from a hazard and risk. Ask for and give examples.

Step Two: Give a short presentation on common measures to eliminate, control, minimize and protect from hazards/risks.

Step Three: Present an example like the one shown below. Break trainees into small groups to develop a similar table for the *other* hazards/risks in their work area.

Step Four: Each group reports back results followed by a discussion. Be sure to give feedback to correct and support learners.

Step Five: Some hands-on training for some critical actions (e.g. like how to install timber supports in the example below) can be given in the field.

Step Six: Finish the session by discussing how participants will use what they learned.

Table Twelve: Example of a Hazard/Risk Response Table

Common Hazard or Risk	Important Questions to Ask	Proposed Measures			
		ELIMINATE	CONTROL	MINIMIZE	PROTECT
Rock falls and roof collapses	▪ Are rocks in the roof and walls very loose or highly fractured? ▪ Is water seepage high? Is water ponding quickly? ▪ Is there bulging at the base of walls? ▪ If timber supports exist, are they bending or cracking?	▪ Stop work in the area completely and prohibit all persons from entering the area.	▪ Install or improve timber supports or construct timber frame square sets (filled with waste rock). ▪ Scale the loose rock (*only* if just a few rock blocks are loose) using a long bar.	▪ Rules for risk reporting, response and work stoppage in high risk areas. ▪ Preventative Maintenance Program (U/G supports). ▪ All persons working underground must be in teams of 2 persons or more. ▪ No worker is active in areas not inspected by supervisor, manage or other responsible person.	▪ All underground workers should have hardhat, suitable clothing and gumboots.
Have trainees fill in and develop other examples	▪	▪	▪	▪	▪

In this example, the trainer should have good technical knowledge of the hazards and risks on-site and how to deal with them. The Guidebooks and Manuals outlined in Annex One will help and can be used as resources or handouts in Training Sessions. Because trainees should now be familiar with how to identify and respond to hazards and risks, this session is a good lead-in to training on how and when to report an incident, including near misses as well as accidents, injuries and illnesses.

Training Topic #2: Reporting an Incident

In terms of broad-based training, the workforce should be recognized for their important role in reporting to supervisors and management any hazards and risks as well as incidents when they happen.

A training session on this may include:

Step One: Organize a short role play on an unreported near miss incident that later results in a major accident and its consequences.

Step Two: Discuss what happened and what it means in terms of individual workers responsibility. This can include presentation and discussion of the incident-to-major accident pyramid (Section 4.3.2).

Step Three: Give a brief presentation on the Company Policy to encourage and praise reporting of incidents and pledge no disciplinary action unless it is a case of criminal intent, willful negligence and use of drugs and alcohol (Box 5). Ask for and discuss examples of how positive reporting leads to company responses and those specific cases when a worker would be disciplined for accidents or incidents.

Step Four: An interactive discuss of important definitions. For each one, trainees should be asked to give examples to make sure the meaning is known.

TERM	DEFINITION
Accident	An unexpected and unplanned event, which causes death, personal injury, deleterious health effects or damage to property.
Lost Time Injury	When a worker has more than one shift off duty because of a doctor's orders (excluding travel time to a hospital or clinic).
Serious Accident	That which results in a lost time injury or if property damage exceeds a value specified by the company[5].
Minor (First Aid Only) Accident	Although a worker may visit a doctor to get checked, but no medical treatment. An example is putting antibiotic ointment and a bandage on a small cut.
Near Miss Incident	When an unexpected and unplanned event happens that has *potential* to (but does not) cause death, injury or negative health effects or damage to property. An example is a pit wall collapse that happens when no one is working in the area.
Occupational Illness	This means an illness or disease of a worker which may have resulted from work at a mine. This might include something like vibration white finger cause by frequent use of a jackhammer, respiratory problems from chronic exposure to smoke or even a cholera outbreak cause by poor sanitation and hygiene at the mine.
First Aider	A woman or man who takes actions to respond to someone who is injured or suddenly ill while taking care that everyone involved is also kept safe.

Step Five: Create a mock exercise and have trainees determine when, to who and how to report incidents. This will mostly be verbal and to supervisors, although written submissions should be possible (e.g. using a suggestion box). If supervisors do not take action, workers should be encouraged to report to higher management with a promise of complete confidentiality.

Step Six: Finish the session by discussing how participants will use what they learned.

[5] Legislation in Rwanda does not specify the amount of property damage constituting a "serious" accident. The Company may establish some value for this until this legislation is developed.

Training Topic #3: How to Respond to an Accident or Sudden Illness

Incident response procedures are about what each worker needs to do when a sudden illness or injury occurs or a serious hazard or risk has been identified. To know when and how to respond occupational incidents and accidents, training and sensitization will be needed for:

- **Every worker**, who should know *how* and *when* to safely rescue someone from a situation immediately *or* when it is better to keep the victim(s) stable and in the same place.
- **First Aid Officers** (or "*First Aiders*"). Every worker should eventually have some Basic First Aid Training but this will take some time for companies with large workforces. Specialized training for at least one in ten workers is a good start.
- **Supervisors, Chief OSH Officer and/or Mine Manager,** who should know who to contact (within and outside of the mine), how to mobilize additional rescue, first aid and medical treatment measures (if needed), how to evacuate and secure an area for investigation and how to conduct an incident investigation.

Basic steps for responding to an accident, injury and sudden illness are shown in Figure 9.

Workers should know how to follow these basic steps but should also be aware of *How to Assess the Scene***.** Rescuers may be put at great risk if they rush into an accident, injury or illness scene without looking at the workplace conditions. For example:

- *Sudden Illness*, such as vomiting, intense headaches or loss of consciousness, may be a result of exposure to chemicals (like carbon monoxide) or lack of oxygen underground. These conditions can quickly turn would-be rescuers into new casualties.
- *Rescue Efforts* may make areas more unstable and lead to an even bigger accident. For example, removing soil or rock following open pit or underground tunnel collapses can make rock or soil even less stable if not carefully done.

Minor Injuries, such as small cuts, wounds and bruises, should be treated by a Trained First Aider but a visit to a Doctor may follow as some injuries and illness can be more serious than they appear. Injured or sick persons may also downplay how hurt or sick they are out of fear of losing production time and they should be calmly encouraged to discuss any symptoms that can't be seen. Although most minor accidents, injuries and illness don't require urgent, coordinated rescue efforts or immediate contacts with Senior Management and authorities, an Incident Investigation Form (Section 4.3) should still be completed by a Supervisor.

Photos 1 and 2: A Simulation of Emergency Response to a Serious Injury at a Small Gold Mine
(Photos: S. Turyahikayo)

A training session on this may follow these steps:

Step One: Introduce the topic and ask for examples of serious illness and injury. Review the definitions from Training Topic #2 and go over the diagram below step-by-step.

Step Two: Run simulations for several scenarios to make sure the procedures are well known by all trainees. On-site simulations will be useful.

Step Three: Give a brief presentation giving detailed steps for rescue efforts when specific serious incidents happen.

Step Four: Break participants into small groups and have each group develop diagrams showing *detailed steps* for rescue efforts for different incidents. These should be reported back and discussed with corrective feedback given. This can be a competition to help build pride and ownership where some diagrams can later be turned into posters and put up in key visible areas.

Step Five: Ask trainees to list procedures again to make sure they are well understood. Additional on-site practice exercises may be needed. Evaluate this session carefully to make sure trainees are confident in how to respond.

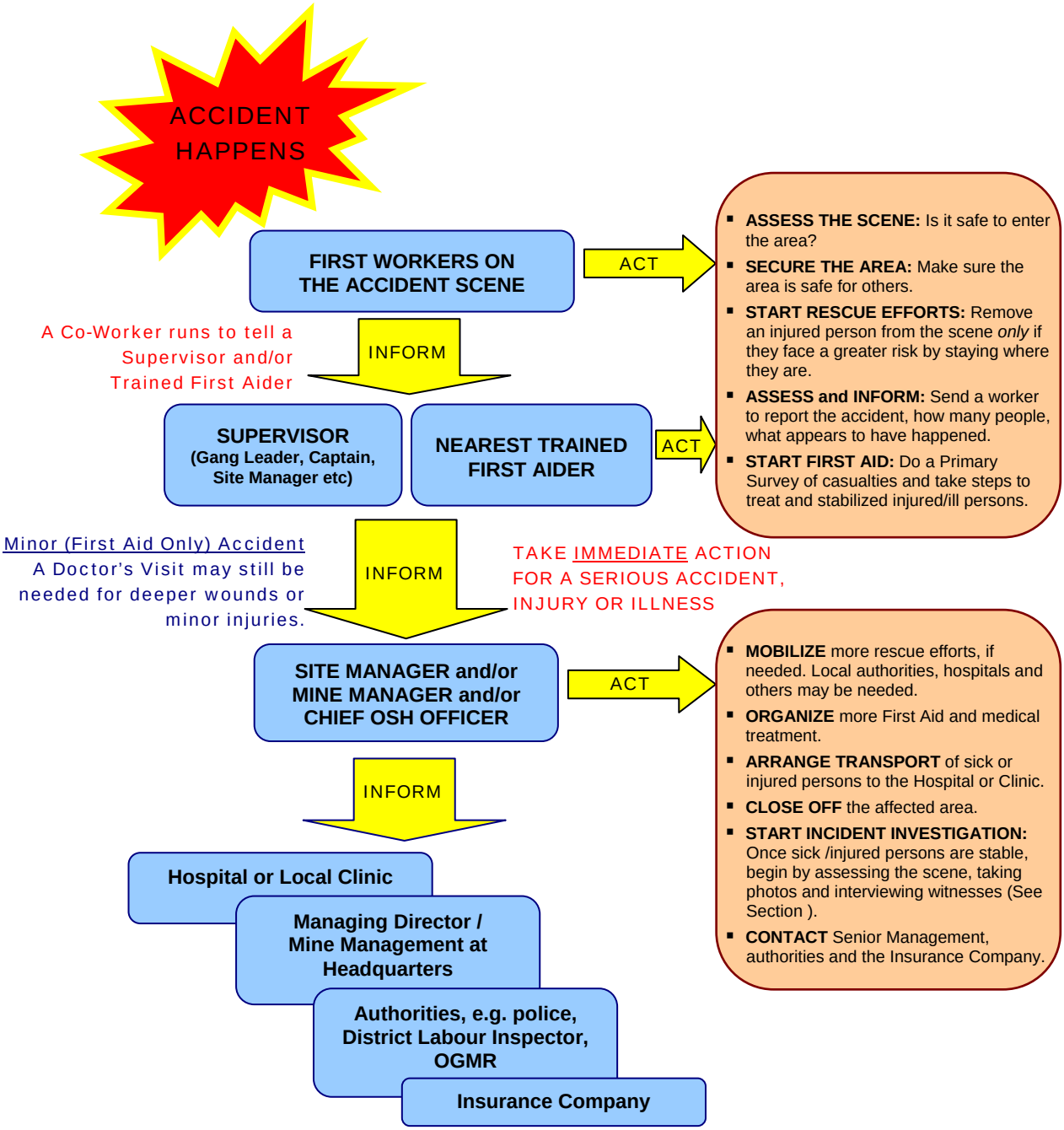


Figure Nine: What To Do When an Accident or Sudden Illness Occurs

Training Topic #4: Basic First Aid Training Program

First aid is the initial assistance or treatment given to a person who is injured or suddenly ill. It is not a substitute for medical treatment by a doctor or treatment in a medical facility (hospital or clinic), which may be needed for any injury or illness that is not minor.

At least 1 woman or man in every work group and no less than 1 out of every 10 workers in a group should have First Aid Training. These trained persons also need to know procedures for response and reporting of an incident. Ideally, all workers should have a very basic understanding of main first aid principles (severe bleeding, broken bones, when to move a casualty).

Many organizations, such as the Red Cross, run training courses to suit a range or organizations and needs. The Company will need to contract such an organization to run this training. Basic components of a First Aid Training Program should at least include:

1. First Aid Basics

- Dealing with a casualty
- Protection from infection
- Managing an Incident
- Requesting help

2. How to Assess a Casualty

- Primary Surveys (The ABC Check: Airway, Breathing, Circulation)
- Secondary Surveys (Questions to Ask, Symptoms versus Signs)
- The Head-to-Toe Check

3. Emergency First Aid

- Action in an Emergency (life saving priorities)
- Conscious versus unconscious casualties
- CPR
- Choking
- Heart Attack and stroke
- Severe external bleeding
- Shock
- Broken Bones
- Head Injuries
- Spinal Injuries
- Burns
- Moving a Casualty

4. First Aid for Minor Injuries

- Respiratory problems
- Wounds and circulation
- Bones, joints and muscle injuries
- Poisoning, bites and stings
- Burns (fire, electrical, chemical)

5. Identifying Illnesses

- Occupational illnesses (silicosis, vibration white finger, etc)
- Sanitation and hygiene diseases (cholera, typhoid, etc)
- Other common illnesses (malaria, etc)

6. Supplies and Equipment

- Components of a First Aid Kit

Companies should establish links with the nearest hospital or health clinic and have contacts of their doctors and other key staff. A vehicle should be at the ready on-site to transport casualties. Some mines keep a nurse on staff to supplement First Aiders.

5 SUPPORTING CONTINUOUS OSH IMPROVEMENTS

Regular workplace inspection is essential to help make sure corrective action is taken *before* accidents, injuries or illnesses occur. Together with incident investigation reports and regular analysis of hazards and risks, workplace inspection is one of the most important monitoring and evaluation tools that a Company can use!

Equally important to supporting continuous OSH improvements is making sure all men and women workers, managers and supervisors – including Senior Management – are held accountable for fulfilling their OSH roles and responsibilities.

Guidelines for workplace inspection (Section 5.1) and accountability (Section 5.2) will support OSH Policy objectives and help the Company identify practical ways to assess, adapt and improve the OSH Programs outlined in Section 4.

5.1 Workplace Inspection Program

This guideline provides a detailed checklist for different sections and units of a mine. Because every small operation is different, the checklist should be adapted for the hazards and risks at your operation and your capacity to inspect.

Because each manager/supervisor/inspector is responsible for safety and health in their different areas (at mine sites, plant, stores, etc), the checklists have combined basic inspection standards *together with* day-to-day monitoring needs to help make sure roles and responsibilities are being fulfilled.

Three main types of inspections are suggested:

1. ***Regular, Daily Monitoring of Conditions and Practices:***
   Workers using specific equipment should inspect them at the beginning of a shift. Supervisors should, as they carry out their day-to-day work, inspect working conditions to ensure conditions and practices are safe. Checklists are *not* completed during regular, daily monitoring but they could be "signed off". Issues should nevertheless be noted and reported as they are observed and corrective actions taken.

   Supervisors (mine manager, line managers, captains etc) should, in any case, *understand the contents of the Inspection Checklist for their areas* and use it as a guide. Even if literacy is an issue, training can help build understanding of the issues, conditions and practices required to maintain a safe and healthy work environment.

2. ***Scheduled Workplace Inspections:***
   This should primarily be done by the Chief OSH Officer in all major areas of the Mine. General Workplace Inspections by the JOSHC are proposed on a quarterly basis. Checklists are provided for each.

3. ***Ad hoc Inspections:***
   When issues or concerns have been raised, inspections by the Mine Manager, Chief OSH Officer or other JOSHC members should be undertaken using the appropriate Inspection Checklists. Even in the absence of major concerns about hazards or risks, unscheduled inspections can help keep the workforce on their toes.

If a serious hazard or risk is identified at any time during inspection, areas should be immediately evacuated and the Chief OSH Officer and Mine Manager informed. Guidance for emergency response procedures are shown in Figure 7 (Section 4.6.3).

**THE WORKPLACE INSPECTION CHECKLIST CAN BE USED AS A TOOL
TO HELP ALL SUPERVISORS – LINE MANAGERS, CAPTAINS, LEADERS ETC –
KNOW WHAT TO LOOK FOR AS THEY CARRY OUT THEIR DAY-TO-DAY DUTIES.**

5.1.1 When to Conduct Inspections and Who Should Conduct Them

Proposed inspection schedules are shown below. As the OSH System is being set-up and good OSH practices become the norm (maybe over the first 6-12 months), inspections should be carried out more often.

Table Thirteen: Schedule of Main Types of Inspections

Area of Inspection	How Often		By Who	Comments
	First months after OSH System Set-up	Long-term		
Work Areas (see below) under an Individuals' Supervision	Monitoring of conditions and practices combined with day-to-day duties		Line Managers, Captains, Leaders and Supervisors	Use the Inspection Checklist as a Training Tool and Guide to help build supervisors' and workers OSH ability.
General Workplace	Quarterly		JOSHC	Workplace Inspection Checklist
• Active Underground and Open Pit Sites	Weekly	Bi-weekly	Chief OSH Officer or Safety Coordinators	Workplace Inspection Checklist
• Mill and Tailings Storage Area	Weekly	Bi-weekly	Chief OSH Officer or Safety Coordinators	Workplace Inspection Checklist
• Storage Areas and Explosives Magazine	Weekly	Bi-weekly	Chief OSH Officer or Safety Coordinators	Workplace Inspection Checklist
• Offices, buildings and other infrastructure.	Weekly	Monthly	Chief OSH Officer or Safety Coordinators	Workplace Inspection Checklist
• Workshop, Machines, Equipment and Tools	Daily	Daily	Equipment User	Basic inspection at the beginning of a shift
	Bi-Weekly	Monthly	Head Mechanic or Technician	Develop a Checklist based on the Preventative Maintenance Program

Results of regular, quarterly and ad hoc inspections should be analyzed by the Chief OSH Officer and reported to the JOSHC.

BOX EIGHT: DAILY EQUIPMENT INSPECTION IS AS EASY AS 1-2-3
THE JACKHAMMER EXAMPLE

Women and men who regularly use a piece of equipment and tools should inspect them before they begin their shift. This only takes a few minutes and is a useful way to prevent damage to property and accidents. Jackhammers are extremely important in Rwandan Mines and should be inspected daily by:

1. Visually checking all components (hammers, pick retainers, picks or drill rods, pressure lines, connections, compressor, pressure gauge) for any damage.
2. Look for spills and leakages of oil, losses of air pressure due to improper connections and damage to pressure hoses and pipes. Make sure parts (like hammers) are well lubricated.
3. Before drilling in any area, check the working face for misfires! Never use pick-hammers to break materials that might contain misfired explosives or detonators!

During operation:

- Watch to make sure the air pressure does not fall below 5 bar. Adequate air pressure significantly reduces vibration and is more effective than alternating operators.
- Put a small amount of regular lubricating oil into the air entrance of the hammer every 2-3 hours.
- Make sure drilling is done from a position that will not expose the operator to falling rock.

Before pneumatic hammers are moved from one working place to another, the air compressor should be turned off and air bled from the hose.

5.1.2 Key Requirements for Persons Conducting Inspections

Every person responsible for monitoring and inspection should always:

- Have at least one copy of the Workplace Inspection Checklist to guide him/her and a notebook. The Chief OSH Officer and JOSCH will need to complete the checklist as they are inspecting and submit it immediately after words.
- Go to *all* areas where workers are active. If a supervisor/manager/inspector is too afraid to enter, then the area may not be safe enough for *any* human being and work should be stopped and the area evacuated.
- Always wear appropriate personal protective equipment suitable to the area being inspected. This may include hard hat, safety boots, safety glasses or goggles, hearing protection, gloves and dust mask or respirator.
- Walk slowly through the area and around equipment and carefully inspect for hazards.
- Bring necessary tools (e.g. safety whistles, flag tape, pens, clipboards) and warning signs (e.g. “Danger: Do Not Enter”) to do the inspection and isolate areas if needed.
- Have a means of communicating (mobile phone or radio communication) to the Senior OSH Officer in the event a serious risk, hazard, accident or injury has been identified.
- Ask for advice when unsure about the hazards and risks in a certain area.
- Tell the proper people so that hazards or defects can be corrected as soon as possible.

IF A LINE MANAGER OR OTHER SUPERVISOR IS TOO AFRAID TO ENTER AN AREA THEN ASSUME THE AREA IS NOT SAFE ENOUGH FOR ANY HUMAN BEING. STOP WORK IMMEDIATELY UNTIL IT CAN BE PROVEN OTHERWISE!

5.1.3 The Workplace Inspection Checklist

Every mine is different so the Workplace Inspection Checklist should be adapted for the methods, tools and equipment – as well as specific hazards and risks – at your operation. For example, some sites are using heavy machinery and others are not while some sites are mostly surface miners while others are mainly underground.

When adapting the Workplace Inspection Checklist consider that:

1. The Checklist can be broken into separate based on the different areas of the mine. This may be simpler to follow and use for line managers (e.g. site managers, vein captains, gang leaders).
2. If there are many extraction sites, extra copies of the checklist will be needed to inspect each of the different areas separately.
3. Some aspects of the Checklist (e.g. presence of signs) are more meaningful for Quarterly Inspections.
4. The Workplace Inspection Checklist appears long, but once an inspector has used it a few times, he or she will become familiar with it and will automatically know what to look for. The Checklist helps make sure nothing is missed.
5. Many aspects of the Workplace Inspection Checklist provide a foundation for “*Safe Working Procedures*” and can easily be extracted to help develop these. These aspects may not always be practically inspected (e.g. blasting may not always be taking place during inspections times) but are still useful as a basis of what to do and look for.

Table 14: General Workplace Inspection Checklist

Area Being Inspected: _____ Manager On Duty: _____

Name of Inspector: _____ Date of Inspection: _____

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
Employees and Subcontracted Workers				
1 Supervision				
(a) Area/Site Manager on the job.				
(b) Security checkpoint at entrance.				
(c) Access Restricted sign at entrance				
(d) All Site Managers and Captains have whistles.				
(e) Headcount registry in use.				
2 Personal Protection				
(a) Signs at entrance showing PPE needed for entry.				
(b) Head Protection ▪ Hard hats provided ▪ Hard hats being worn				
(c) Footwear ▪ Gumboots provided ▪ Gumboots being worn				
(d) Hand Protection ▪ Gloves provided ▪ Gloves being worn				
(e) Protective Clothing ▪ Suitable for task ▪ Provided and maintained				
(f) Visibility (for underground) ▪ Headlamps provided ▪ Headlamps being used				
Persons working with or near jackhammers, generators or other machines:				
(g) Safety signs are visible (for stationary machines)				
(h) Ear Protection (muffs, plugs) ▪ Ear protection provided ▪ Protection being worn correctly				
(i) Eye and Face Protection ▪ Protection provided ▪ Eye protection being worn				
(j) Protection from Dust (in areas where dust generated) ▪ Dust masks provided ▪ Dust masks being worn				
3 General				
(a) A stocked First Aid Kit is on-site.				
(b) At least 1 of 10 workers per group on-site is a Trained First Aider.				
(c) Workers wearing visible ID cards.				
(d) Only authorized persons on-site				
(e) No person was observed under the influence of drugs and/or alcohol.				
(f) No incidences of verbal, physical or sexual abuse or harassment were observed or reported.				

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
General Conditions				
4 Sanitation and Hygiene				
(a) All pit latrines for men are clean and in good condition.				
(b) All pit latrines for women are clean and in good condition.				
(c).All hand-washing stations are clean and stocked with water and soap.				
(d) Hand-washing signs visible.				
(e) Adequate supply of clean drinking water is available				
(f) All areas are kept free of rubbish and debris.				
(g) Clearly marked garbage/rubbish bins have been emptied.				
(h) An adequate supply of clean drinking water is available.				
(j) Separate areas for eating are available and are clean and tidy.				
5 Storage				
(a) Shelves storing PPE, tools and other supplies are neat, tidy and uncluttered.				
(b) No food stuffs are stored with tools, equipment or other supplies.				
(c) Records and registers are stored and kept in order and up-to-date.				
6 Roads and Ramps				
(a) No rock spillage.				
(b) Roads and ramps are passable and free of obstructions.				
(c) No signs of cracking of collapse of edges.				
(d) No oil/diesel spillage.				
(c) Speed limit signs posted.				
(d) Vehicles follow speed limits.				
Drilling and Blasting (Underground and Open Pit)				
5 Drilling with Jackhammers				
(a) Parts (hammers, pick retainers, drill rods, pressure lines, hoses, connections, compressor, pressure gauge) show no signs of damage.				
(b) No spills and leakages of oil or losses of air pressure observed.				
(c) Drilling is performed by teams of two persons or more and jackhammers who regularly alternate operation.				
(d) Jackhammer users do not “ride” the machine, hoist it over the shoulder of one team member or otherwise use it improperly.				
(e) Any jackhammer over 18kg is used in conjunction with a jackleg.				
(f) Adequate dust suppression measures are used during drilling				
(g) Jackhammer operators show no signs of vibration white finger.				

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
6 Storage of Explosives				
(a) Explosives are stored only in the company magazine until prior to use.				
(b) Only explosive material is stored in the magazine. Detonators are kept in a separate magazine or compartment than explosives. Blasting agents are kept separate.				
(c) The magazine is clean, dry and locked. Access is only to the designated person.				
(d) Safety Signs are clearly visible at the magazine entrance.				
(e) The area at least 10 metres surrounding the magazine is kept free of rubbish, dry grass, trees and other combustible material.				
(f) Gasoline, diesel and other highly flammable substances are kept at least 20 metres from the magazine.				
7 Transport, Preparation, Setting and Firing Explosives				
(a) Explosive material is promptly delivered by authorized persons only to the blast site only once blast holes are ready for charging and in a quantity required for one round.				
(b) Separate, clearly labeled containers are used for transport of explosives and detonators.				
(c) Only designated persons are engaged in transport, handling and preparing explosive materials.				
(d) No sources of heat, sparks, open flame lamps, smoking or fires are located in the blast areas.				
(e) Explosive materials show no signs of deterioration.				
(f) Only non-sparking tools such as wooden charging rods are used for tamping explosives in blast holes.				
(g) Only certified blasters are engaged in setting, charging, tamping and firing explosives.				
(j) The Chief Blaster is last to leave the area and take proper shelter before blasting.				
(h) No undue delays in firing once all circuits have been connected.				
8 Evacuation and Return to Work				
(a) Ample warning given to evacuate all persons from blast area to a clearly marked safe refuge/collection points.				
(b) Guards or barricades placed to prevent passage of any persons back to the blast area.				
(c) Workers stay in collection points/ refuges until the Chief Blaster has inspected and confirmed there are no blast related hazards and have given the “all clear” sign.				

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
Underground Mining				
9 Supports of Adits, Tunnels and Shafts				
(a) Headframe is collared using timber or bags of sand or waste rock.				
(b) All adits and shafts where weak rock is found are properly supported with timbers or other suitable materials.				
(c) Supports are set on a strong foundation (competent host rock, solid wood or concrete blocks).				
(d) Timber supports are in good condition and show no signs of failure (cracking, bending).				
(e) Any existing pillars are intact and not subject to mining.				
(f) Unsupported roofs show no major cracks, loose rocks, sloughing or high rates of water seepage.				
10 Ventilation				
(a) Persons working at the advance of working faces have been asked and have reported no signs or poor air quality or low oxygen levels like dizziness, rapid heart rate, undue sweating or breathing problems.				
(b) Flame safety lamps, detector tubes or other air monitoring equipment show no signs of poor air quality or low oxygen levels in areas of work.				
(c) Entrance and exit shafts or adits and/or functioning ventilation fans or blowers are provided in all areas or those with poor air equality/flow or low oxygen levels.				
(d) Entrance and exit shafts or adits are unblocked, fans or blowers are functioning and in-use and air ducts are in good condition.				
(e) Old bins, large rocks or other stationary objects have been removed from all adits and near to suction sides of fans and blowers.				
(f) No signs of damage are seen on air ducts (tears or rips), fans and blows (and their components)				
11 Access				
(a) All adits have alternative exits at least 50 metres apart from each other.				
(b) Ladders or steps are in-place and in good condition for movement in all adits and any inclines that are steeper than 45 degrees.				
(c) All inclines steeper than 45 degrees are equipped with a handrail or rope in good condition.				
(d) Permanent adits are not less than 1.7m high and 1m wide.				
(e) All adits and tunnels are free of rubbish, equipment and tools not in use and other debris.				

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
12 Mine Water				
(a) Where the entrance is below the ground surface, small trenches have been dug to direct surface water away from the mine entrance and are free of obstructions and debris.				
(b) Small water collection channels have been dug in adits with ponded or running water to direct water to sumps and are free of obstructions.				
(c) Water pumps are in-use and functioning properly in areas where needed.				
(d) Pumped water not required for other purposes is directed to a dug or natural sedimentation basin which is not clogged and functions properly.				
13 Hoisting and Haulage				
(a) Winches/windlasses and cables show no signs of damage and are functioning properly.				
(b) Each winch/windlass has functioning dead lock brakes.				
(c) All rails in use are in good condition and kept free of debris and rubbish.				
(d) Deflection rollers are located in corners and show no signs of damage.				
(e) No persons man-riding haul buckets or cars.				
Surface Mining				
14 Pit Wall Stability				
(a) Overburden is stripped at least 3 metres back from the pit wall edge.				
(b) Overburden and waste rock is stockpiled at least 10 metres back from the pit wall edge.				
(c) No undercutting of overburden.				
(d) No undercutting of pit walls without strong supports in place and in good condition.				
(e) No major fractures, evidence of wall rock falling or signs of movement or shifting of pit wall.				
(f) No major cracks on surface parallel to foot wall edge or heaving at the toe of the pit wall.				
(g) Waste rock berms constructed 2-4m from wall bottom where heaving of the toe observed.				
(h) Long metal rods on site and in use for scaling of loose rock.				
(i) Pit bottom evacuated before scaling.				
(j) Scaling of loose rock done from the top or at a safe distance from the bottom of pit.				
(k) For pits deeper than 4 metres, benches are located at least every 2m and are in good condition.				

FEATURE INSPECTED	STANDARD MET? Y = Yes N = No N/A=not applicable	If Standard is Not Met		
		RISK LEVEL L=Low M=Medium H=High	DESCRIPTION OF DEFECT, HAZARD OR RISK	ACTIONS TO BE TAKEN
(l) Pit wall angles are no steeper than 65° in strong unfractured rock and 30° in highly weathered rock or an angle deemed safe by a competent person.				
15 Access Paths, Ramps and Roads				
(a) Access paths and ramps show no signs of collapse or cracking, standing water and are in good condition.				
(b) Access paths and ramps are free of obstructions.				
(c) Access paths and ramps are of a sufficient width to enable passage of any haulage/transport equipment used (wheelbarrows, trucks, persons).				
16 Mine Water				
(a) Drainage ditches are dug, where needed to direct run-off water away from the pit.				
(b) Drainage ditches are dug on the inside (pit wall side) of haul ramps and paths and are clear of debris and obstructions.				
(c) Water pumps are in-use and functioning properly in areas where needed.				
(d) Pumped water not required for other purposes is directed to a dug or natural sedimentation basin which is not clogged and functioning properly.				
Buildings and Structures				
17 General Condition				
(a) No building damage.				
(b) Floors and not damaged or dirty.				
(c) No lights out or broken.				
(d) Sufficient lighting				
(e) Sufficient ventilation/air flow				
18 Amenities				
(a) Sufficient, clean drinking water available.				
(b) Eating areas separate from work areas and are clean and tidy.				
(c) Food storage separate from other storage areas.				
(d) Toilets/latrines available for women and men and are clean.				
(e) Change rooms are available for women and men and are clean.				
19 Emergency				
(a) Exits identified and free from obstructions.				
(b) Evacuation plan in place.				
(c) Fire extinguishers in place, conveniently located up to date and in good condition.				

Important Note:
The Checklist provides a guide for Companies to develop their own Workplace Inspection Checklists. Given differences in geology, water conditions, practices and other site specific factors, should not be taken as a substitute for selection of suitable technical parameters appropriate for a specific site.

The Company is responsible for adapting any suggested parameters or standards for different sites and areas of their operation and developing any additional standards based on hazards and risks in their operations.

Furthermore, this Workplace Inspection Checklist is a template. **Other aspects of the Workplace Inspection Checklist that should be developed by companies relate to:**

- Record keeping and registers.
- Use, storage, handling and disposal of hazardous materials, chemicals and gas cylinders and pressure vessels.
- Waste management (waste rock, tailings, rubbish) and water management.
- Equipment, machines and hand tools
- Ergonomics
- Fire prevention and protection.

5.2 Accountability System

All persons in the operation are accountable to fulfil their roles and responsibilities as outlined in Section 3.2.2. Accountability works both top-down and bottom-up in the mine organization. For example, all workers are responsible to work in a safe and healthy manner for themselves and fellow workers, their supervisors are responsible for ensuring this happens and top management of the Company is ultimately accountable for providing the leadership and resources to enable them to do so and mine management is held to account for use of these resources to effective implement the OSH Policy and Programs.

Remember that *responsibility* is accountability for carrying out duties properly while *authority* is the right to make decisions and direct the work of others. The greater the authority, the greater the responsibility. Workers are immediately accountable to their line managers, gang leaders or other supervisors while these supervisors are accountable to the manager above *and* for the safety of those they supervise.

As the highest authority, Company Management is ultimately accountable for ensuring that everyone:

- Knows *and* truly understands what their roles and responsibilities are;
- Has the authority, resources, time, and opportunity to carry them out;
- Has the required knowledge (education, training, certification) to fulfill these responsibilities.
- Is aware of the consequences for not fulfilling their OSH roles and responsibilities.

Small Rwandan Mines will likely face some technical and financial challenges in responding to these needs, especially in early phases of the setting up the OSH System. In any event, the Company has an ethical and legal responsibility to take steps towards achievement of OSH Policy objectives.

Integrating OSH into mine planning, budgeting and development as well as job descriptions, as any other activity needed to make a mine function properly, is a start.

BOX NINE: ACCOUNTABILITY OF PERSONS IN THE MINE ORGANIZATION

Different men and women working in the organization can be “held to account”:

- **Senior Management of the Company** is accountable for providing overall OSH leadership, the necessary human and financial resources to implement the OSH Policy and related OSH systems and reviewing and responding to OSH reports, evaluations and concerns.
- **The Mine Manager** is accountable for the implementation of this Policy and supporting OSH systems and will make sure that sufficient resources are made available and properly used in order to achieve these stated objectives.
- **The Chief OSH Officer** is accountable for the implementation of OSH systems, investigation of accidents and incidents and promotion of safe practices in work areas.
- **All managers, supervisors, gang leader and captains** are accountable to ensure that those men and women whom they oversee work in a healthy and safe manner and are provided with the knowledge, skills and tools to make this possible.
- **Every person** is accountable to work in a manner that is healthy and safe for themselves, their workmates, persons affected by their work and the environment where they work.
- **Every person** has a responsibility to identify hazards, respond to them where possible and report them to their supervisors for appropriate action. Before pneumatic hammers are moved from one working place to another, the air compressor should be turned off and air bled from the hose.

5.2.1 Monitoring and Evaluating Performance

Many useful tools have been put forward to help monitor and evaluate OSH performance of the Company, its workforce and the JOSHC. These include:

- Mines Inspection Reports.
- Hazard and Risks Analysis, including actions required to eliminate, prevent, control, minimize and protect from risks.
- Incident Investigations.
- Registers or log books showing Preventative Maintenance.
- Minutes of JOSHC Meetings.
- Grievance System

As Mines Inspections are undertaken, incidents are investigated and areas where corrective or preventative action are needed to deal with risks, Responsible Persons must be *held to account* for taking *or* failing to take appropriate action.

From each of these sources, ask the questions: Was any preventative or corrective action required? Was it taken? If not, why? Did the Responsible Person fulfill their responsibilities? Did persons directly above the Responsible Person fulfill their responsibilities? Why or why not? In some cases, failure to fulfil accountabilities may require disciplinary action (Section 5.2.2) while, in others, this will identify where financial resources, training or tools/equipment may be needed and areas where the OSH System can be improved.

Findings from analysis of these tools should be integrated with annual Performance Assessments of individual men and women (e.g. Mine Manager, Line Managers and Supervisors, employees) while they are also useful for evaluating:

- Progress towards OSH Policy objectives;
- Performance of specific OSH Programs and the overall OSH System;
- Areas for improvement, both in terms of the OSH Programs and specific units or sites at the mine.

Monitoring and evaluation of performance can and should equally be used to reward persons, groups or units for fulfilling or exceeding their OSH responsibilities. Some ways to do this are described in Section 4.5.6.

5.2.2 Disciplinary Action

All workers should know that there are *only* three reasons to discipline a worker for an OSH incident or incidents. They are:

1. ***Willful Negligence:*** This is failure to act when a reasonable person who knows and understands that a risk exists would take action. Negligence to act is not willful if a person sees something that might create a safety or health risk but doesn't know or understand that it is a risk. Their lack of action is because of lack of knowledge and they need training rather than discipline.
2. ***Criminal Intent:*** This is when actions are done on purpose or intentionally in order to cause harm to people or property.
3. ***Use of Drugs or Alcohol:*** Working while under the influence of illegal drugs and alcohol can create an extremely unsafe environment for all workers and is prohibited under the Company OSH Policy.

If investigation has determined that any of these have been committed by an individual, disciplinary action to hold people to account can range from:

- ***Warnings***, for minor acts of willful negligence (e.g. not wearing a hard hat).
- ***Suspensions from Work and/or Pay Deductions*** for moderate acts that do not put life in harm's way or equipment/tools/property have been subject to moderate damage.
- ***Suspension from Work or Dismissal***, particularly for serious acts of willful negligence or use of drugs and alcohol on the job.
- ***Civil or criminal action***, when deliberate acts to persons or property have been taken.

It should be very clear that consequences may go up the lines of authority. This means that a supervisor or manager can be held accountable for individuals who fail to carry out their OSH responsibilities due to lack of knowledge, training or resources.

ANNEX ONE: USEFUL SOURCES OF INFORMATION

One of the main challenges facing Rwandan Mining Companies in terms of implementing the OSH Policy and Programs relate to knowledge and skills to identify and respond to technical challenges. A number of excellent guidebooks and training manuals are available and will help fill this gap. They are simple to understand and can provide a useful basis for training sessions and communication tools (e.g. posters, signs).

1. Safety and Health in Small Underground Mines

These booklets written by Manfred Walle and illustrated by Rita Walle were developed for small mines in Mongolia but are an excellent resource for any small scale mine. They can and should be downloaded freely from:

http://projekt-consult.de/CMS/index.php?option=com_content&view=article&id=54&Itemid=61.

They include:

Booklet # 1: Organization of Safety and Health in Small Scale Mines, Personal Protective Equipment and First Aid

- Duties and obligations a mine operator and mine workers
- Requirements for employment in underground mines
- Actions to prevent danger and following a mine accident
- First Aid
- Mine Facilities

Booklet # 2: Safe Mine Design and Mining Methods

- Basic problems in underground mines
- Means of access and egress
- Ground control in underground excavations
- Natural support (room-and-pillar mining)
- Artificial support (e.g. timbers)

Booklet # 3: Subsurface Atmosphere and Ventilation

- Gases in subsurface openings
- Gas detection and monitoring
- Providing ventilation
- Artificial ventilation (forcing system)
- Natural ventilation

Booklet # 4: Explosives and Blasting

- Hazard Description and Controls
- Types of explosives and blasting caps
- Storage, transport and handling of explosives
- General requirements for blasting
- Charging, tamping and firing explosives
- Handling misfires
- Blast design

2. Safety and Health in Small Surface Mines

The International Labour Organization (ILO) developed this basic handbook that can be downloaded freely from www.ilo.org/public/english/dialogue/sector/papers/mines/handbook.pdf. It includes:

- Common mining hazards, accidents and dangerous occurrences
- Health, welfare and hygiene of mine workers
- Safe Mining Methods
- Mechanical Equipment
- Explosives and blasting
- Mine Closure
- First Aid and Personal Protective Equipment (PPE)

3. Small Scale Mining Handbook

The Ugandan Ministry of Energy and Mineral Development has published a comprehensive full-colour guidebook that covers:

- Basic geology and exploration methods
- Safe underground and surface mine development
- Mineral processing methods, equipment and tools
- Environmental management in small scale mines
- Occupational health and safety
- Legal requirements for small scale mines
- Basic business skills for artisanal and small scale mines
- Community health issues in small scale mines
- Community development issues, including how to form strong and effective organizations.

The Handbook is likely to be posted on internet at www.memd.gov.ug in the near future but hard copies can be requested from:

The Commissioner
Department of Geological Survey and Mines
P.O. Box 9
Plot 21-29 Johnstone Road
Entebbe, Uganda